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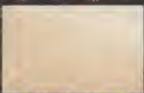
CARIBBEAN DISCOVERIES:

Turneffe
Island
Costa Rica
St. Vincent

3 Snorkeling

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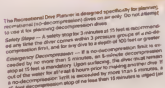
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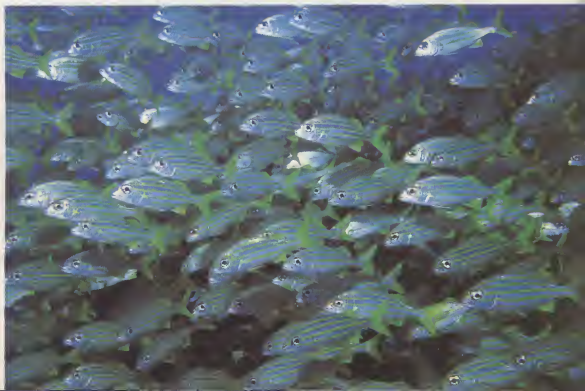
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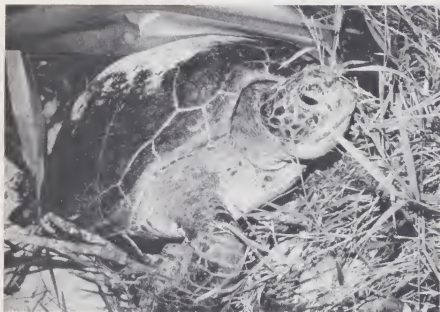


Photo by Eric Hanauer



Photo by Darren Douglas

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Editor's Page

As hurricane Hugo cut its swath through the Caribbean in late September, I waited anxiously for reports on the destruction of islands to be featured in this issue of SCUBAPRO Diving & Snorkeling.

As many readers know, magazines are produced months before they reach your hands and the die was cast for this issue before Hugo was even named. In my worst case scenario, I envisioned large black "Xs" painted across pages as islands disappeared.

One featured destination, Puerto Rico, was hit hard on the north end as were two offshore islands. Relief efforts began immediately and hopefully things will be business as usual shortly. The Caribbean has a way of recovering quickly after a storm as witnessed by the remarkable cleanup of Cancun after hurricane Gilbert struck there in the fall of 1988. We wish all the people along Hugo's path a speedy and full recovery.

Unanticipated changes are the bane of writers and editors where travel articles are concerned. Resorts change hands, dive boats and operators move on, chefs depart for greener pastures—all between the time the article is written and when it is published months later. For this reason, with every travel article, we try not only to present an accurate, timely picture of the diving and topside amenities, but also to provide sources of additional information every reader should contact during the planning phase of any trip.

A case in point is Walt Stearns' article on page 58 about Costa Rica. Walt initially planned his trip for April, assured the visibility would be good for diving. Because of an unusually late rainy season and persistent northeast winds, the visibility was, in fact, too poor for underwater photography. Walt returned in June when conditions were much improved. He also revised his travel notes to reflect the conditions.

If you're going to spend a couple of thousand dollars for an annual or less frequent trip to a distant paradise, be sure to check on conditions before you commit to a trip. A \$10 phone call to the resort itself is a small price to ascertain if there have been any changes since you read about the location six months earlier.

Besides Costa Rica, several other unusual destinations are featured in this issue. St. Vincent and Barbados were visited by Tim O'Keefe and both were found to offer good diving if you are looking for someplace new to dive. Neither were in the path of Hugo and their tourist boards confirm there was no damage.

The same is true of Turneffe Island, which is located off the coast of Belize, well out of harm's way. Bob Burgess found Turneffe to be as close to paradise as he could imagine. The diving is reported to be great and the single lodge on the island is first class. Bob's account begins on page 12.

As the height of the winter travel season nears, the urge to drop everything and catch a plane is very strong. But before you dial that 800 number and book a trip, spend an hour in the library and make a few calls. The effort could save you a lot of anxiety and disappointment.

Edward Montague

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On a small Malaysian island,
divers can observe the complete
life cycle of the green turtle.

BY ERIC HANAUER

From SHELL

When Ron Holland told me there were turtles mating some 300 yards offshore, I didn't move very quickly. After all, this was my ninth day of diving on Sipadan, a tiny island off the coast of Borneo in Malaysia. I had seen and photographed plenty of turtles. Besides, I thought, by the time I swam out there the turtles would be long gone.

But Ron insisted, saying once turtles got started, they would keep mating for at least an hour or more. Skeptical, I grabbed my housing, mask, and snorkel, and started to kick toward a bobbing black lump on the horizon. As a veteran of numerous aquatic wild goose chases, I held little hope of getting a picture. But as the distance closed, they were still there. "Don't quit now," I thought, "after all this swimming I deserve at least one shot."

I needn't have worried. The turtles sex drive easily overcame their fear of humans. I followed as the mating pair headed downward, continuing their amorous tryst. The male was on top of the female, grasping her carapace with his front flippers. After descending to about 30 feet, they leveled off and started for the surface again, apparently in need of air.

The female did all the swimming, the male was just along for the ride. For the next 20 minutes they continued, diving occasionally, but always returning into shallow water. Two more turtles appeared. Apparently there were males attracted by the mating ritual, which they attempted to join. (It has been reported



to SHELL

that sexually aroused male turtles will attempt to mount almost any appropriately-sized object, including divers.) I watched in amazement as one of them climbed atop the first male in an impromptu underwater *menage a trois*, while the other continued to swim around them. The intruders obviously weren't welcome. The second male was chased off, but continually attempted to climb back on board. All of them seemed nearly oblivious to my presence.

Suddenly, as though its frustration

had become too great, the fourth turtle swooped in between the original mating pair on a collision course. Within an instant all of them had split and disappeared separately into the blue.

Although it occurred on the final day of our trip, this mating dance is actually the opening scene in the life cycle of the green turtle, *Chelonia mydas*. The entire life span, from conception to death, can be seen at Sipadan Island.

Egg laying occurs on land. Any night of the year, at least two or three females haul themselves out on the beach to lay

Eric Hanauer is an Associate Professor of Physical Education at California State University, Fullerton. His new book, *The Egyptian Red Sea: A Diver's Guide*, is published by Watersport Publishing Co.

their eggs. During the height of the season, August through October, 30 to 50 may come ashore every night.

Adult green turtles, along with hawkbills, may be encountered during nearly every dive on Sipadan. Often they are seen resting in crevices or along the shallow reeftop or swimming lazily in open water. Many of the larger ones have remoras attached to their carapaces. Divers can sometimes approach close enough to touch them, but catching and riding turtles is discouraged. Holland, an expatriate Englishman who runs Sipadan's dive operation, is intent on protecting the island's wild, unspoiled state.

For some turtles, the final chapter of their life story is played out in a submerged, limestone cave beneath the island. A virtual graveyard, people call it "the place turtles come to die." Holland calls this romantic nonsense. His more pragmatic explanation is that the turtles entered the cave looking for food or rest, couldn't find their way out, and drowned.

The cave entrance is a narrow hole in the reef wall, at a depth of 20 feet. To navigate a couple of tight passages, we have to turn sideways as our tanks scrape the rocks. But suddenly it opens into a huge, dark chamber. With only the light from our torches piercing the blackness, we follow the guidelines Ron has set across the ceiling and come upon a huge rock formation, resembling a rhinoceros head. Just behind the "horn" lies an intact turtle skeleton, the skull arched upward, as if searching through empty eye sockets for a way out. In the silt below the rock lie two more skeletons. Continuing to follow the lines, we are led to more and more remains—19 skeletons in all. Almost without exception, they are completely intact. Many more skeletons probably lie beneath the silt on the cave floor.

Ron once found a turtle which had recently died, lying on the bottom. When he returned a couple of days later, it was gone. He eventually found the body pinned against the ceiling, buoyed by the gases of decomposition. A week or so later, the rotting carcass was lying upside down on the bottom. Holland doesn't allow anyone to disturb the bones, although I suspect he may have set up the skull on the rhinoceros rock for a more dramatic picture.

Continuing through the narrow passageway, we turn off our lights to observe a school of flashlight fish. Suddenly, the cave opens up into a vast main chamber. Here the bottom drops to 60 feet, and an ethereal blue light filters in through the high, arching main entrance. If a turtle could find its way this far, it would be safe. However, inside the first chamber we had been total-

ly dependent upon our lights, and on the guidelines stretched across the ceiling. That cave has become a death trap for many turtles.

While some life cycles end in the cave, all begin on the sandy beaches surrounding the island. It is here that female turtles haul ashore to lay their eggs. Walking along the beach at night, we look for the unmistakable sign of turtle tracks. A huge female, weighing upward of 300 pounds, labors heavily as she drags herself across the sand into the fringe of the island's jungle. Here she digs a shallow pit, larger than her body, throwing sand backward with wide sweeps of her front flippers. The entire island is pockmarked with craters, resulting from innumerable turtles following the same instinct.

Once the pit is dug, the female begins to work on the hole which will protect her eggs. This narrow, deep cavity is dug with her rear flippers. Up to this point, the turtle is easily disturbed. Any sudden noise or light may cause her to abort the process and return to the sea. Once egg laying is under way, however, she is committed to the process and will continue to the finish despite noises, lights, or even flash photographs.

Every 15 seconds a round egg, slightly larger than a ping pong ball, drops into the hole. The female's body heaves upward, and sometimes she utters an audible sigh as the egg drops. Some observers have attributed the sigh, along with the turtle's tears, to the pain of egg laying. Actually, the "tears" are merely the turtle's way of excreting excess salt. Many seagoing birds have the same mechanism. As for the sigh, it is caused by the effort of breathing. In the ocean, the turtle's weight is supported by the water. On land, her lungs must labor against gravity to perform the task of respiration.

All told, a female green turtle will lay from 50 to 100 eggs. At this point, the nesting process is only half completed. She must now cover and hide the eggs. Throwing clouds of sand backward with massive thrusts of her front flippers, the turtle seems to be attempting to swim in the sand. She is actually concealing the hole where the eggs have been laid, and excavating a gradual slope which will allow her to climb out of the pit. During this procedure, the pit will have shifted some three meters forward, and she will have moved a half ton of sand. Sometimes, at the height of laying season, another turtle's eggs may be dug up during this process.

By now, the female has been out of the water over three hours, gravity pressing heavily upon her body. Finally, she drags herself through the underbrush, back across the beach toward the water. Progress is slow and painstaking.

Sometimes, if the way is blocked by a fallen log, she may have to double back and retrace her path. Watching, we are tempted to help her, but the 300 pound weight and the realization that interference would only panic a wild animal, makes us keep our distance. When she finally reaches the water, we are almost as relieved as she is.

It would be comforting to report that the eggs will hatch within 50 to 80 days (dependent on temperature) and produce a clutch of young turtles. But in nature, only about one in a hundred of the eggs will grow to maturity. Many of the hatchlings are killed by birds and animals before they ever leave the beach. Of the ones that make it into the water, most are quickly eaten by fishes and crabs.

But on Sipadan, few of the eggs are left to hatch. A native, living on the island, collects the eggs each morning, just as his ancestors have done for generations. Although Muslims are forbidden to eat turtle meat, there are no prohibitions against their eggs. Prized in Malaysia for their supposed aphrodisiac qualities, they are sold in local markets.

But before condemning this practice, another facet has to be examined. A number of eggs are transported to a government hatchery, where they are incubated and hatched. The young turtles are kept and fed for three months, until they grow to about a foot in length. About 500 to 600 a year are then returned to Sipadan and set free. The natives claim that more turtles will make it to maturity this way than would be possible in nature.

Not everyone agrees. Some experts contend that hatchery-reared juveniles lack the "street sense" to survive in the wild, making them easy prey for sharks and marine mammals. However, despite many years of egg collecting, there seems to be no shortage of turtles around Sipadan.

Because egg laying and hatching occurs on land, these processes are easily observed and are the most thoroughly studied aspects of the turtles' life cycle. What happens in the ocean leaves many unanswered questions. Once the hatchlings move into deeper water, they are "lost" for about a year. It is generally agreed that they head toward open sea, and migrate long distances. The diet of green turtles consists mainly of algae, so it is conjectured that young ones spend a lot of time in floating sargassum, wherever this plant is available.

Eventually they return to the island where they were born, to lay their eggs. Almost nothing is known about how they find their way. Tagging experiments around the world have shown that,

(Please turn to page 57)

SONAR VISION

Scubapro's hand held Personal Dive Sonar allows you to determine the distance to the bottom, shipwrecks, reefs, other divers, schools of fish and other objects. A sonar beam angle of only 24-degrees allows you to easily pinpoint boats on the surface, anchor lines, kelp, and see through the dark during night dives or in dirty water.

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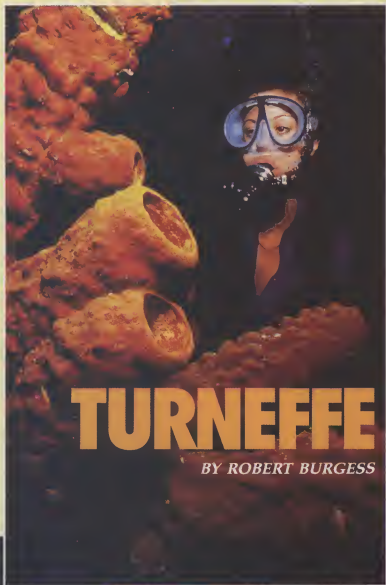


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TURNEFFE

BY ROBERT BURGESS

Thirty miles off the coast of Belize, there lies a small island the owners call a diving "kingdom."

ISLAND

Could This



Approaching by boat, the colors of the water practically knock your eyes out. Shades of blue and green appear you never thought existed. I kept yanking off my polarized sunglasses to see if the colors were real. They were. Purples so electric they pulsed. Greens to shame fields of emeralds. Blues with so little respect for the sky they just ran rampant. Everything from cool subdued blues to blues so hot that they looked luminous. "Wow!" someone murmurs, "Talk about Nature's patchwork quilt!" They're so right.

Be Paradise?

Soon the horizon is broken by the kind of tropical island everyone dreams about—a low-lying, sunlit swatch of pristine white sand topped by lush, tropical foliage. Tall, arched coconut palms sway in the balmy breeze, their ragged green fronds splashed brightly across the blue sky. Just over the palms, etched against the clouds like oriental fighter kites, black scissor-tailed frigate birds seem glued to this vibrant Van Gogh-like backdrop.

From all appearances, anyone would think we were approaching an island in the South Seas. But that wasn't the case. What we were seeing was the quiet little mythical Kingdom of Turneffe in the Caribbean, about 30 miles off the coast of Belize.

A half hour later we gathered in the spacious mahogany paneled, Key-West-in-the-30s bar/dining room/social center of Turneffe Island Lodge.

"Hello!" said a smiling, sun-bronzed fellow with a close-cropped beard. "I'm

the owner, Dave Bennett. Welcome to the Kingdom of Turneffe." With a twinkle in his eyes, this 53-year-old Sean Connery look-alike continued, "Here in the Kingdom, we create our own laws. We can marry people or we can divorce them. We can even levy taxes. So for the remainder of your stay we're going to declare the time here an hour later than it is in Belize City. That means it's now 12:10 p.m., not 11:10 a.m., and lunch will be served in 20 minutes." And with that pronouncement by the boss of the Kingdom, our week in paradise began.

Usually guests are welcomed by big, bearded Hugh Parkey, the amiable manager of Turneffe Island Lodge. He plays king when the boss isn't around. But this time we were lucky enough to catch Bennett on his monthly visit to the island, so things were due to get into high gear.

Backtracking a bit, our trip to paradise wasn't really much more than a hop, skip, and jump. I had caught Tan Sahsa, the Honduran airline, in Miami for a two-hour trip to Belize City. Others had come from the two other main jump-off places serviced by the same airline—New Orleans and Houston. Still others, like Dave Bennett, had reached Belize aboard Taca airlines that serves these same cities. No matter how they came, guests were helped through customs by the lodge's reps, then mini-bused to the nearby Villa Hotel for an overnight stay. The next morning they boarded the island's 38-foot *Grand Slam*, or the 30-foot *Yo' Mama* for the two-hour run to the island.

The island is Caye (key) Bokel, Dutch for "elbow," since it's the southmost of some 200 other islands comprising the diamond-shaped, 32-mile-long by 10-mile-wide Turneffe Islands Atoll. This is the middle atoll of the two others—Glover's Reef and Lighthouse Reef—off Belize, Central America, sur-

rounded by a famous 178-mile-long barrier reef often referred to as the largest living barrier reef in the western hemisphere. As far as divers are concerned, that incredible reef is Belize's claim to fame.

Except for a few native fishermen in the northern part of Turneffe Atoll, Caye Bokel and the Turneffe Island Lodge are a solitary diving and sportfishing outpost. The fact that it is within easy reach of over 100 world-class diving sites is the reason why this resort is classified a paradise for divers. The resort's credo that Dave Bennett painted across one of the main porticos: "We're not here for a long time, just a good time," sets the tone for our stay.

It's easy for divers to have a good time without a bit of hassle, starting from the moment one sets foot on Caye Bokel. After room assignments, you touch your dive gear only once, when you bring it down to the dive shop and set it up. After that, the island's staff looks after it for you. When you step aboard the dive boat, it's racked and ready. When you step onto the dive platform, it's there and a staff member helps you into it. After the dive he helps you out of it and you needn't worry about its care. When you board the dive boat again, there's all your gear, rinsed, dried, and ready.

Such treatment spoils the dickens out of even the most hard-bitten divers. It reaches the point where you almost don't know what to do with your hands!

Explains manager Hugh Parkey, "One of the things that makes Turneffe Island Lodge different is the service you get here, and the consistency of it. As Dave always says, the way you spell success is P-E-O-P-L-E. We have the kind of people who are willing to maintain that level of service. When I was in the retail end of the dive business," Parkey said, "one of the things that impressed me about SCUBAPRO and made me loyal to them was the dealer and customer service they provided. It carried over into my retail business and I gave the best service I could, and it has carried

Robert Burgess is a Florida based writer who has authored many books about diving on subjects including shipwrecks, treasure diving and underwater archaeology.

over into this. I think service is what makes Turneffe what it is."

Certainly the service is extraordinary, but few guests really realize, or even anticipate, what awaits them underwater until they've made a couple of dives. Then, the differences between diving the more popular areas of the Caribbean really become apparent. After all, one barrel sponge pretty much looks like another, and one squirrel fish, or grouper, or stingray, isn't much different than any other in another setting. But in the Kingdom of Turneffe, the difference seems to be that there is just more of everything, and it's even more spectacular than what you've seen in other places.

Frankly, I'm a rather snoopy diver. I like to prowel around the insides of old shipwrecks and check out the inhabitants. I like to crawl under ledges and see what's hanging from their ceilings. Or I go into caves and photograph things that perhaps have never seen the light of day.

And so it was in my early dives out of Caye Bokel—the walls of Turneffe Atoll were not physically much different from the walls of other Caribbean resorts, but there the similarity ended. The first thing one notices is the marine life. Instead of a blue void opposite the cascading corals, there are schools of

fish—in great numbers regardless of the species. When you dive a site called *The Elbow*, be prepared to see anything from echelons of spotted eagle rays, to dense black schools of snappers, big grouper just hanging out as if for the fun of it, occasionally sparring around in what may be a mating ritual you are privy to watch if you wish. Maybe you'll see a leisurely cruising 70-pound king mackerel, a lackadaisical nurse shark, or a passing fleet of silvery permits that one observer described as fish the size of Toyota tires.

But fish are fish, and about the time the tenth dense school of chubs are eclipsing the sun, I'm trying to arm-measure a golden tube sponge the size of a hairy mammoth's trunk. Glorious sponges, like enormous amber-hued cucurbitacians, are everywhere along Turneffe's walls. Never have I seen so many and so large a population. Even the undersides of the ledges bulged with sponges. The shallow caves turned out to be more colorful than Aladdin's fabulous grotto. They were half-hidden jewel boxes containing encrusted sponges in every color of the rainbow, with algal decorations and tropical fish ornaments that defied description. I was not totally aware of the magnificence of those caves until after I saw what the camera strobe revealed—a variety of

colorful marine life not commonly seen.

Later, when I discussed this phenomenon with Dave, we concluded that one reason for the incredible richness of life here is the fact that the atoll's mangroves periodically flush pure nutrients into the surrounding seas. Thanks to this, the area's sea life can't help but flourish.

That wasn't the case eight years ago when Dave and his wife Jill first came to the island to see what needed to be done to upgrade the resort. They found a rather tired old fishing camp. When the Bennetts put a small compressor aboard one of their boats and began exploring the atoll's underwater world, they realized it was a virtually untouched paradise of corals. Sadly the fish life was on a decline: as native netters had just about wiped it all out.

Dave took on the job of trying to salvage the existing marine life in the area. Commercial gill-net fishermen were told to stay out of Caye Bokel waters and fish at their end of the atoll. If they came anyway, Dave issued a sterner warning and escorted them away. Some sneaked back. Strange things befell any netters who came after that. Nets mysteriously got cut loose and were lost. Outboard motors developed problems in Caye Bokel waters. One netter even reported seeing an eerie apparition of a long-dead Dutch pirate with an incredibly cruel looking face under his red bandana. That was just before the figure leveled a long rifle at him and shot off a part of his boat's bow. No one knows what he saw but tales of long-dead pirate activities abound in these islands. Since then, native netters have kept their distance.

As a direct result, the area's marine life began to flourish once more, and today these waters abound with fish, rays, and turtles. One guest said he had just come from diving Grand Cayman, Bonaire, and Cancun and he saw more fish life in one dive out of Turneffe Lodge than he had seen in all the other places combined.

Comments like that only make Dave Bennett grin. He knows the uniqueness of what he and Jill have created, and he knows how to keep it that way. The simple key to his success is keeping his quality operation small. Turneffe Lodge books only 16 guest at a time. Each guest receives top-notch service from the day he arrives until the day he departs.

On some dives the divemaster may ask guests not to wear gloves. That way one isn't tempted to touch the fragile corals and spectacular sponges seen at such places as *Cabbage Patch*. Hence, that shallow water jewel of a place will be just as pristine for the next group to see.

Adverse weather never seems to affect

TRAVEL TIPS

Requirements

A valid passport is required. Expect to pay the usual entry tax of \$2 and departure fee of \$20 at Belize.

How To Get There

Daily flights to Belize aboard the Honduran Airline, Tan Sahsa ((800) 432-9818), and Taca Airline ((800) 535-8780) can be arranged from Miami, New Orleans, and Houston costing about \$250 roundtrip.

Turneffe Island Lodge Reservations

Make them well in advance. They have about a 95 percent occupancy rate. Since there are accommodations available for only 16 at a time, dive groups should make reservations at least six months in advance. Though subject to change, current rates for diving, Belize City lodging, and transportation to and from the island is \$1,000 per person a week (\$850 summer). Fishing, boats, and guides

are extra. For reservations and further information contact: Turneffe Island Lodge, P.O. Box 24781, Jacksonville, FL 32241. Phone: (800) 338-8149 or (904) 691-5356.

What to Expect

Outstanding diving virtually year-round with water temperatures between the high 70s and lower 80s. Pack tropical clothing. We saw no insects whatsoever but you may wish to bring insecticide to be on the safe side. All fresh water on the island is obtained from a catchment system. If rain is scarce, showers will operate only part of the day.

Carry your camera and film and any especially valuable piece of gear as hand baggage. Items can be kept in a security vault at the Villa Hotel while you visit Belize City, if you wish. Be sure to report early to the airport for your return flight. Selling more tickets than there are airplane seats is not uncommon.

\$

diving out of Caye Bokel, due to the ease with which fast boats can shuttle groups to leeward, calmer sides. Often the two larger vessels take groups to the more distant atolls such as Lighthouse Reef for a look at another virtually untouched paradise. It's comforting to know that this highly qualified staff of dive instructors and their wives are very experienced folks. Hugh and his wife Theresa come from a lifetime of diving, and were former captains of the area's live-aboard sail/cruiser *La Strega*. Hugh's second-in-command, Ned Simpson, and his wife Evelyn formerly skippered the Belize-based live-aboard, *Coral Bay*. Add to this the fact that their permanent staff of cooks, fishing guides, and boat boys has been with them for many years, the combined qualifications of the people in charge of your pleasure on this island are impressive.

After a 7:30 a.m. breakfast, divers get off about 9:30 a.m. for a deep dive, finishing their tanks on a shallower reef. Following a leisurely lunch at 12:30 p.m., the afternoon dives mirror the morning program. Nothing is structured. The guests choose. Included are some exploratory dives to new areas. If you dive a fantasy world of sponges—many far too large to reach around—it may be *Holly's Folly*, named for model Holly Hart, who stepped out of her skins to pose in a deep cool valley of golden sponges that raised goose bumps—hence the name.

If you like shipwrecks, you can crawl through what remains of the Lodge's old dive boat *Sayonara*, purposely sunk as an artificial reef. You can also drift-dive certain walls; or even do a creek-drift in 15-foot depths through patch reefs and strange, mangrove-rooted worlds filled with snappers and groupers. You can also simply choose to study hovering frigate birds while lying flat on your back in one of the lodge's expansive hammocks hanging amid the palm trees. But believe me, it wasn't just for the birds that *Undercurrent* magazine recently gave Turneffe Island Lodge its five-star rating! Diving, ambience, and money's worth rated those.

For divers wanting to sample some of the island's sportfishing, you can rise early, fight tarpon weighing up to 100 pounds before breakfast, make your two main dives of the day, catch bonefish on the flats before sundown, and still get back in time for supper. If you catch a "Grand Slam"—a tarpon, permit, bonefish, and mutton snapper all in one day—the management will pay for your trip! Others have done it! Fishing boats and guides are available on request. Bring your own fishing gear. All boats maintain radio contact with the lodge.

Other than that, the Kingdom of



The Turneffe Island Lodge is shown above. Holly Hart examines a puffer fish, right. Diver, below, encounters one of the many beautiful fish found in the island's waters.



Turneffe is primitive, so expect the worst. There are no glitzy nightclubs next door, no gift shops around the corner, no telephones in the rooms, and (hardship of hardships) no televisions to watch.

What you get, pure and simple is a service-oriented resort with walls and reefs full of marine life the way they were 30 years ago. Once you've sampled Turneffe, however, there is one small drawback. You'll never again be the same. The culture shock will hit you after going home to reality.

For that you can thank Dave and Jill Bennett for salvaging a piece of the past and turning it into a paradise found. **\$**

Miss Behavior's Guide to SHIPWRECK ETIQUETTE

BY CATHIE CUSH

Shipwrecks pose some of the stickiest questions of etiquette today's diver is likely to encounter. A century ago, when maritime collisions were as common as fender benders in a shopping mall parking lot on red-tag day, people knew the proper length of time to appear somber before rushing out into the surf to scavenge the cargo of a ship that had run aground. Need I say that the correct formula for distributing said cargo was common knowledge, too? Interested parties also knew when they were entitled to the remains of a ship and when they were not.

Ah, but those simple days are gone. Radar, Loran C, and other sophisticated navigational technologies have complicated the shipwreck enthusiast's life immeasurably by severely limiting this once-abundant resource. Still, as long as the One Upstairs, in His or Her infinite wisdom, chooses not to paint yellow lines on the deep blue sea, there will be shipwrecks. And today, more than ever, those who fancy shipwrecks must always behave in the most appropriate manner, lest the rules of etiquette be enforced by guardians other than Miss Behavior.

With that in mind, I turn to my goodie bag and share with you some pertinent samplings of correspondence on the subject of sunken ships.

Dear Miss Behavior,
Some divers are so rude! You should have heard the crowd on board my boat last weekend. The wreck they wanted to dive on had moved, and this gang of ruffians kept trying to blame it on me. I was on the very same wave just a week before and the darn derelict was right beneath the boat. Do I look like the kind of captain who would move a shipwreck and then pretend not to know where it is?

Capt. Confused

Dear Confused,

Put away your compass and sextant. Loran C has done more to foster good relationships between captains and divers than anything since the ladder. This marvel of modern electronics and radio frequency technology can put you back in the same spot easier than you can say "X and Y coordinates." All you have to do is punch in two sets of numbers that represent a point on a grid, and follow your nose until you're there. And the price (approximately \$300 to \$2,500) is well justified, particularly in light of the charter fees you stand to lose if you don't get something soon—like before next weekend.

Loran (short for LOnG RAnge Navigation) only works if you're sure you know where you left the shipwreck, or if you've been collecting loran numbers from fishermen or snooping around in other captains' wheelhouses. If you're looking for a wreck that might be in any number of places, if it's anywhere at all, you're going to have to take more drastic measures (translate: spend more money) and find a more patient bunch of passengers.

Developed during World War II, the sidescan sonar and proton magnetometer are the choice of most professional shipwreck hunters. The sonar records the shape and position of objects lying on the bottom of the ocean, while the magnetometer detects changes in the earth's magnetic field that indicate the presence of ferrous metal. It's a lot of hit and miss—when divers descend to investigate the iron, it could be anything from an old cannon to an abandoned Volkswagen or even less.

If all this sounds too complicated, you could try pulling some divers on a sled behind the boat and see what they run into. They probably won't find anything, but at least they'll have a chance to get wet.

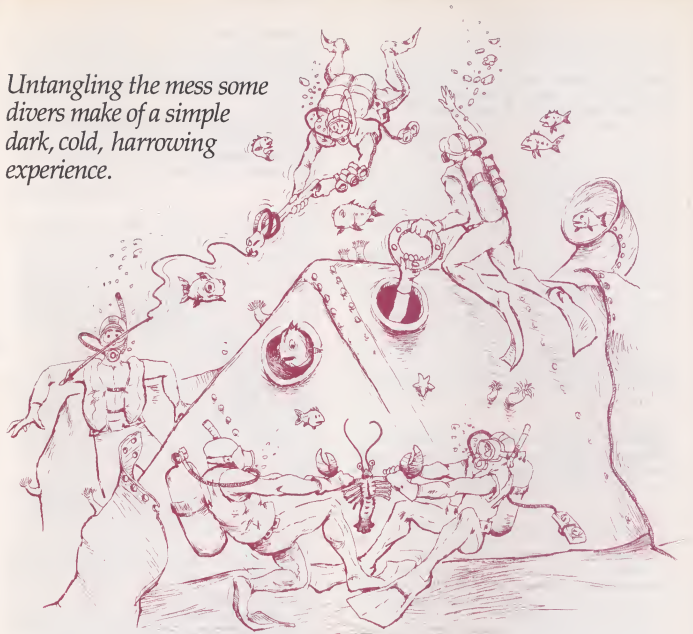
Dear Miss Behavior,

The recent hostilities in the Middle East have created some new artificial reefs in the Persian Gulf area. I am at somewhat of a loss as far as the proper nomenclature for warships. Any ideas?

Mole in the Mediterranean

Cathie Cush is a NAUI instructor and free-lance writer. Cathie last wrote for *Diving & Snorkeling* on her first dive to the Andrea Doria.

Untangling the mess some divers make of a simple dark, cold, harrowing experience.



Illustrations by Nick Fain

Dear Ollie,
As I suspect you already are aware, since World War II, U.S. battleships have been named after states in the Union, while cruisers are named after U.S. cities or territories, aviation heroes, or other great ships. For a time, submarines were christened with the names of fish, while the new nuclear subs are named after cities and states, famous people, and famous fictional submarines.

If the ship in question is not American, you have some more creative options. The oh-so-proper British give their warships appropriately macho names like *Invincible* and *Dreadnought*, while the Japanese ships

now resting at the bottom of Truk Lagoon bear names like *Yamagiri* (Misty Mountain), *Kiyosumi* (Serenity), and *Yubae* (Evening Glow).

If you were very considerate, you might want to name a ship something descriptive like *Ebo's Wreck*, *The Lobster Wreck*, or *North's Folly*. This will save some poor divemaster or charter boat captain the trouble of having to do so in the future, as any other name you choose will invariably be discarded for something more colorful anyway. And you'll enjoy a chuckle a generation from now when someone retrieves the ship's bell only to find that the vessel's name really is "*The Mystery Wreck*."

P.S. Give my regards to Fawn.

Dear Miss Behavior,

My buddy and I found a ship's bell and we're having a hard time determining who is going to keep it. He suggests we split it—he'd get the bell and I'd get the clapper. He says that's the most important part, since the clapper makes the noise, but I'm not so sure.

Sammy Salvor

Dear Salvor,

Depending on where you're diving, there is a chance neither of you are entitled to keep the bell. You did check local regulations concerning artifacts and salvage before you hit the water, didn't you? Otherwise you might find that the state or some other body is trying to lay claim to your find.

Your buddy has an interesting point. I've always been led to believe that since the outside of the bell usually bears the ship's name, it would have more intrinsic value than the clapper. Perhaps you could keep the artifact intact and take turns displaying it—say, six months at your house and six months at his. Or you could donate it to a local museum or dive shop and both take credit for its recovery. If you can't come to a satisfactory resolution, you could do what one captain I know does in situations such as these: While the boat is underway, throw the item overboard.

Dear Miss Behavior,

I meant to write much sooner, but I've been all tied up—literally. The inside of my favorite wreck looks like a seagull's nest, and the outside doesn't look much better. What can I do?

Fit to Be Tied

Dear Fit,

It sounds like you've been diving on what New York/New Jersey divers refer to as a "three-knife" wreck. They may explain it differently, but I've always understood that the first knife is to cut your way out of things, the second is in case you drop or can't reach the first, and the third is for when you catch somebody leaving line all over the place.

Like Hansel and Gretel leaving a trail of bread crumbs on their walk through the forest, many divers will wander willy-nilly all over inside a wreck unreeling nylon line behind them. You remember what happened to Hansel and Gretel.... The rope trick works great until it chafes against a sharp piece of wreckage and breaks or until another diver gets tangled in it and must cut it to get free. There's nothing more disheartening than being deep inside a shipwreck, in an area with which you are unfamiliar, and to see someone swimming at you with the other end of your penetration line. It's better to take your time and learn your way around. When you do run a line, make sure it's taut and make sure you take it out with you. If you use an ascent line and don't reel it up after you've reached the surface, try using biodegradable sisal rope instead of floating nylon or plastic. A turtle will thank you for it, and so will your buddies.

You have less control over fishermen's monofilament. Anglers must love to throw the stuff away, along with those little bits of lead. An enterprising wreck diver could easily get into the weight belt business if he or she could learn to spend a little less time searching for trivial brass trinkets like portholes. You're less likely to

get skunked if you'd settle for a handful of sinkers over more elusive items. If you get real bored, you could always do a "trash dive." Swim around the wreck cutting the monofilament, then stuff it in your goodie bag and take it back to the surface where it can be disposed of properly.

On second thought, it would probably only wind up back in the ocean.

Dear Miss Behavior,

Who turned out the lights? I can't find the exit sign.

Lost in Innerspace

Dear Lost,

Nobody turned out the lights, and that's probably one of the reasons why you can't see where you're going. The main reason, of course, is that between the silt lying on the bottom and the rust clinging to the interior of the wreck, the way out never seems to be as clear as the way in, no matter how careful you've been with your Sea Wings. And the more adept you are with your Stab Jacket, the less your dive will look like a snowstorm on a smoggy night in Detroit.

When conditions inside a wreck do get stirred up, you might want to turn your light face down to eliminate the backscatter effect and to help your eyes adjust to the darkness. This also makes it easier to spot ambient light coming in through openings in the wreck. Never turn your light off completely when you're inside a wreck. You may not get it back on again. Even though you're carrying a back-up, with your luck that won't work either.

One of the biggest etiquette errors a diver can commit is to go inside a wreck without the proper training. Once inside, the possibilities of making the big faux pas are enormous. Becoming the *raison d'être* of an emergency airlift is horribly embarrassing, and if you bit the big one, you'll ruin everyone's day and be known as a spoilsport for the rest of your...you know what I mean.

Dear Miss Behavior,

The other day when my buddy and I were diving, we ran into another buddy team. For some reason, they started shaking their fists and making obscene gestures at us. (They were wearing mitts, but we had a pretty good idea of what their fingers were doing.) Then they started to wrap monofilament around our fins. It was a big wreck and we figured, hey, there's plenty of room for everybody. What gives?

Bewildered Buddy

Dear Buddy,

With nearly 400 feet of shipwreck, you couldn't find an area to explore where someone else wasn't working? The inside of a wreck can be confining enough without trying to cram the entire East Coast Divers Association membership into a single companionway designed to accommodate one pip-squeak petty officer. Besides, some people actually like that adventurous feeling of isolation that wreck diving offers. Unexpected company usually spoils the effect. It's kind of like coming home and finding your in-laws have arrived for the weekend. And is it true that they caught your buddy drawing a map showing the location of the binnacle they were working on but didn't have time to remove?

Dear Miss Behavior,
I've just been invited on my first wreck dive. How do I dress for the occasion?

Wetsuited Behind the Ears

Dear Wet,
Hard-core wreck divers are a formal group. For the most part, basic black is still the rule. For most of the best wreck diving—in the Atlantic, the Great Lakes, etc.—wet



suits are considered far too casual and Lycra skin suits in fluorescent colors are looked upon as frivolous. Dry suits are de rigueur and twin tanks are not only fashionable with this crowd but downright necessary.

As for accessories, you'll want to add several D-rings and clips to any available straps that are showing. To these should be clipped lights, knives, goodie bags, a sledge hammer, a crowbar, more lights, more knives, a ball of twine, tie wraps, an extra knife, a roll of silver tape in case the dry suit leaks, and anything else you can think of from that drawer in the kitchen. You know which one I mean.

With all this, you might think that you'll have a hard time maneuvering on land and that you probably won't need a weight belt to sink. Wrong on both counts. It will be damn near impossible to maneuver on land without the help of a small crane, and you'll still need a weight belt. And ankle weights.

Dear Miss Behavior,
A few months ago I was diving on an old Spanish galleon and I brought up a piece of one of the timbers as a souvenir. Now I can't seem to find it. Have you seen it?

Crumbling in the Conch Republic
P.S. If you need a toothpick, I have plenty.

Dear Conch,
Either your buddy has lighter fingers than he's letting

on, or you neglected to take the steps necessary to preserve the artifact, so your souvenir said "sayonara" and vanished into thin air.

Most artifacts require some sort of restoration after their stint on the sea bottom, if for no other reason than to remove the organic growth that has attached itself to them and which will die either in your gear bag, in your suitcase, or soon after you get home. In some states, possession of this material is grounds for divorce.

After cleaning comes soaking in fresh water to remove salt. Metals like brass and bronze should be soaked for a month or so, as should china and porcelain. Extremely porous items like wood, leather, and paper, however, must soak for much longer—usually until hell freezes over—otherwise they disintegrate upon exposure to air. Then they must spend an equal amount of time soaking in a bath of polyethylene glycol, a waxy chemical that's probably going to cost you a fortune and make you wish you never got involved in all this in the first place—not to mention what the rest of the family is going to say when you tell them that the bathtub is going to be out of commission for an indefinite length of time.

You could make your life simpler if you limited yourself to taking only artifacts made of gold. Gold holds up beautifully even after centuries on the sea floor and needs little or no care when it is recovered.

Dear Miss Behavior,
When retrieving one's first porthole from the bottom, does it matter which arm one uses to carry it to the surface? I say the right arm, because it's stronger, but my buddy insists that the artifact should be held with the left hand, leaving the right free in case passing fellow divers wish to extend their congratulations. I am eagerly awaiting your answer...

At the Bottom of the Anchor Line

Dear Bottom,
Ideally both hands should be left free, enabling you to shake hands with both members of a buddy team simultaneously. This can be achieved by running a cable around the artifact and attaching it to a liftbag, which can then be filled with air and sent to the surface. This method eliminates the temptation to use the Stab Jacket as a dumbwater—a practice that has sent more than one butter-fingered diver screaming to the surface like a Polaris missile while the offending artifact sank back to the bottom like the proverbial lead balloon.

Theoretically, the lift bag should reach the surface well before you do. If it doesn't, you're probably going to need a helicopter ride, and the fate of your artifact will seem much less important. To avoid the disappointment of watching your liftbag and artifact drift off over the horizon, just as you break the surface, you might consider tying it off to a spot on the wreck.

If you have any problems raising artifacts, just tell me exactly where they are, and I'll gladly retrieve them. And when I'm finished, I have piece of swamp land I'd like to sell you.

Perplexed about proper diving procedures? If you have a question, write Miss Behavior, c/o Scubapro Diving and Snorkeling, 66 West Gilbert St., Shrewsbury, NJ 07702. If she doesn't have an answer at the tip of her reef gloves, she'll make one up.

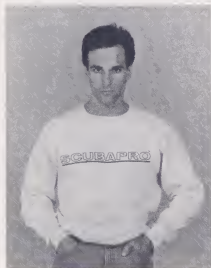
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SHOPPERS' CORNER



SEA SHIRTS

Take a hard look at the design on SCUBAPRO's new Sea Shirts—there is more to see than what first meets the eye. Of course, there is a Queen Trigger Fish, but there are also three other marine images to be seen. Sea Shirts are made of 100% cotton for long lasting wear. They are available in four "fishy" patterns.



CREW NECK SWEATSHIRT

SCUBAPRO's Crew Neck Sweatshirts are made of 100% cotton and feature full length sleeves along with ribbed neck bands, cuffs and waistband. This comfortable sweatshirt is soft, yet rugged, and will seem like it lasts forever. The sweatshirt is colored Birch and is attractively lettered in Teal. It is available at your authorized SCUBAPRO Dealer in sizes Small through X-Large.

GRAPHITE SWEAT OUTFIT

SCUBAPRO's Graphite sweat outfit features a hooded sweatshirt with stress point coverseaming, double thickness sewn-on hood with drawstring, a muff pocket, matching pants featuring premium weight fleece, elastic waistband with drawstring, and rolled elastic leg bottoms. This premium outfit is perfect for before/after dive wear or for casual wear. Made of 100% cotton, it is available in four sizes: Small, Medium, Large, and X-Large. ▶



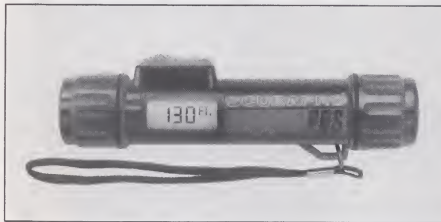
WINDLESS JACKETS & PANTS

SCUBAPRO's new Windless Jackets & Pants are made from DuPont's lightweight Supplex™ material. These ultra lightweight garments provide a softer than nylon feel. Lined with a soft, warm flannel liner, Windless Jackets & Pants fit and feel like no other diver wear garment ever has. Rain resistant DuPont ZE PEL provides an invisible shield against the elements. The jacket is hooded and has a hand warmer "pouch" pocket. The pants have an elastic waist with drawstring, and back patch pocket. Available in Small, Medium, Large, and X-Large sizes. ▼



DOUBLE DUTY REGULATOR BAG

Measuring 13 inches x 6 inches, this rugged nylon bag provides complete protection for your regulator system. Inside it has a padded waterproof vinyl material for added protection. Fitted with a convenient webbed handle, this bag can also double as a cooler bag with a holding capacity of up to 12 beverage cans. Its rustproof nylon zipper provides for ready access and rugged dependability. The Double Duty Regulator Bag is available in four colors: Red, Blue, Gray, and SCUBAPRO Teal.



SONAR VISION

SCUBAPRO's hand held Personal Dive Sonar allows you to determine with ease the distance to the bottom, shipwrecks, reefs, other divers, schools of fish, and many other objects. A sonar beam angle of only 24 degrees allows you to easily pinpoint boats on the surface, anchor lines, and kelp. The PDS becomes a must during night dives or in dirty water. The PDS can see objects up to 260 feet away and operates down to 300 feet. With only one switch to operate, the lighted display immediately tells you the distance to objects. Available at all authorized SCUBAPRO Dealers.

SEA WINGS HYPERTHANE FINS

SCUBAPRO's Hyperthane fins are truly the ultimate in technology and comfort—and are virtually indestructible. Designed with comfort and efficiency in mind, these patented fins are the best available anywhere. They are available in three sizes.



SCUBA PROTECT & UNDER SEE

Scuba Protect was specially formulated for SCUBAPRO to restore the "just like new" look to rubber, plastic, leather, and vinyl. Simply wash your gear and spray on Scuba Protect for that new-look shine. Available in an 8-ounce pump spray for easy use.

Under See's cleaners and wetting agents give you the clearest possible view all throughout your dive. Spray Under See onto your mask lens and rinse thoroughly. You'll agree that things really do look better. Available in two convenient pump spray container sizes.



BY M. TIMOTHY O'KEEFE

BARBADOS, *Jewel of the Empire*

*The British have been taking the cure here since the 1700s.
Divers will find good sport on the many shipwrecks
and old bottles they've left behind.*

Dives to shallow-water wrecks are usually disappointing. Not only are the ships typically stripped of everything, the marine life tends to be sparse except for a few tropicals.

The *Berwind*, a French tug that sank in Barbados' Carlisle Bay in 1920, proved to be a notable exception. Sitting upright in only 30 feet of water with parts of it coming to within eight feet of the surface, the 60-foot tug was loaded with corals, sponges, and fish. Although much of the upper superstructure was missing, enough framework remained for some terrific photography.

The fish life was amazingly profuse. A big school of grunts filled a hold near the stern, while big squirrel fish hung motionless in several narrow openings in a halfhearted attempt to stay out of sight. Frog fish and sea horses also in-

habited the wreck.

Obviously, this was not a wreck where I had to keep moving after every photo to look for something more interesting. If anything, I was spending too long in each place, in danger of running out of film before thoroughly exploring the ship.

I kept reminding myself there were two more wrecks within swimming distance to the *Berwind*, but I spent so much time on the tug I never got to them. Closest was the *J.R.*, a dredge barge sunk in 1983 as an artificial reef in only 20 feet of water. This created an ideal location for snorkelers, too.

Haroon Degia of The Dive Shop had warned me beforehand that the *Berwind* would captivate the most experienced underwater photographer, and he was correct. I could be content spending an entire week on this shallow wreck alone, without seeing the rest of Barbados.

Amazingly, the *Berwind* was only a five-minute boat ride from my hotel, the Grand Barbados, whose distinctive pink

M. Timothy O'Keefe is Editor-at-Large for the Florida Sportsman and a professor of journalism at Central Florida University.





and white colors acted as a shore beacon. Haroon's The Dive Shop, like most dive operations on the island, was hotel affiliated, serving both the Grand Barbados and the Hilton just a few hundred yards down the beach. However, with a call ahead, divers from any hotel are welcome to join any of the dives.

From the *Berwind* (also spelled "Berwyn," which Haroon insists is incorrect), Haroon took me bottle hunting, which in Barbados can be unusually rewarding. For centuries, Carlisle Bay was the main anchorage for ships visiting Barbados from all over the world, and the discarded litter of past centuries is now the highly prized treasure of antique bottle collectors. Haroon had recently found an old French bottle that a visiting diver offered him \$500 for.

"If he offered me that much, I wonder what it's really worth," Haroon joked.

So far, the government has placed no restrictions on taking home such valuable finds. The types of bottles are quite varied, from hand blown black and brown bottles that date to the 1600s, to bottles that are torpedo shaped.

However, it's not easy to find truly rare bottles in mint condition. But the hunt—and the hope—are what makes

Bottle hunting can be very productive in Carlisle Bay.



the bottom grubbing fun. Actually, you're more likely to hit the jackpot here than in any of our state lotteries. Please note that I said "you are;" I found a couple of keepers but nothing remotely approaching the value of Haroon's French wine bottle.

Not only did the morning's dive change my opinion of shallow-water wrecks, it helped me to rethink Barbados' stature in terms of a diving vacation. On my initial visit a couple of years back, my impression was that Barbados was a good place for a Caribbean vacation if you also wanted to do a little diving—emphasis on "little." But the more I see of the island, the more I realize the variety of wrecks is itself enough of a reason to visit; the land activities now rank as second choice.

Barbados, a stunningly beautiful island located in the deep Caribbean, is 1,612 miles southeast of Miami and 575 miles southeast of Puerto Rico. The easternmost Caribbean island, its location puts Barbados off the most heavily traveled tourist path. Barbados has nonetheless been attracting visitors since the 1700s.

It was one of the earliest outposts of the British empire, and from its founding ranked as a favorite wintering spot for the English gentry, who believed that bathing in the turquoise waters would cure or prevent a variety of illnesses. Barbados' bountiful fruits and vegetables and its warm tropical climate were probably the most important medicinal qualities, especially in contrast to the foods and climate of home. With such a long tourism history, Barbados offers much more to do than most Caribbean islands, including visits to some of the oldest English homes in the Western Hemisphere.

To divers, however, the underwater ruins are more remarkable. Just offshore in front of the Grand Barbados is the *Friars Craig*, a Dutch island freighter that sank in 1985 just a quarter mile offshore in 50 feet of water. The fish swarm the deck at 30 feet, making it another relatively shallow dive. Although the cargo holds have caved in and the stern has broken away from the main deck, the stern is still intact, allowing a swim inside the cabin and through the engine room.

Barbados' real showpiece is the 365-foot, World War II vintage Greek freighter, the *Stavronikita*. One of the most dramatic wrecks in the Caribbean, it was gutted by fire and sunk deliberately in 1978 with 200 pounds of strategically placed explosives. The *Stavronikita* sits upright just 400 yards from shore in 150 feet of water. You don't have to go anywhere near that deep to enjoy a good view. A forward mast rises to within 25 feet of the surface, while



Vacationer gets some dry land instruction on wind surfing.

the deck is at 90 feet.

Perhaps the best overall view is from the *Stavronikita*'s deck, looking skyward to the huge triangular struts of the forward mast. The ship is loaded with hundreds of sergeant majors that make a dramatic sight with the mast in the background. For those who like deep dives, the huge prop is still intact below the fantail.

For most divers, wrecks are usually more intriguing than the low profile reefs (locally called "bars"). The reefs are mostly a forest of sea whips, big sea fans, and huge brain corals. Compared to the big coral mounds of Bonaire or Cozumel, these formations may be disappointing at first glance, but they are teeming with fish and small marine life ideal for macro photography. Local divers claim the reefs are low profile due to the prevailing currents and swells.

Snorkelers will find plenty of good sightseeing in addition to the shallow wrecks. The Folkstone Underwater Park is a shallow trail that leads right from shore, with above-water markers to guide the way and underwater markers to explain what you're seeing. The underwater trail is just another element that helps make Barbados an unusual-yet good dive destination.

As previously mentioned, topside activities in Barbados are among the most varied—perhaps the most varied—in the Caribbean. Whether it's shopping, sightseeing, hiking, golf, tennis, deep sea fishing, or dining, Barbados has it. The capital city of Bridgetown is a main shopping and sightseeing area; just try to schedule your visit on a day when a cruise ship isn't in town so you can really see the city when it is not so crowded.

Bridgetown, was founded in the 1630s; apparently named after an old Indian bridge that spanned the Careenage. Today, modern sportfishing boats are available for charter from this same spot. The sand-colored parliament buildings, built in 1871, tower over the city, looking more like churches than the seat of government. They are right next to Bridgetown's Trafalgar Square, wherein stands a statue of Britain's Lord Nelson. This is not an imitation of London's Trafalgar Square. Lord Nelson was highly admired in these parts and the statue honoring him predates London's by 27 years.

Outside Bridgetown, the sightseeing is extremely varied, from tours of old sugar plantations to wildlife refuges to underground caves and old churchyards. It takes at least two days to ex-

(Please turn to page 56)



Illustration by Nick Fain

BY RICHARD E. EASTON, M.D.

CALL ME in the Morning

Picture azure water with 150-foot visibility, and you are there, at 60 feet or so, nearing the end of the first dive of the day. Your "thumbs up" signal tells your buddy and the divemaster you're heading up. Watching your smallest bubbles float toward the surface, you safely ascend.

If all is going so well, I ask, why do you look so frustrated? The answer is a familiar one. You used up your air supply after only 18 minutes at 60 feet! So YOU are going up, but everyone else will continue diving the reef for much longer. Really great! Another chance to hear about the huge grouper THEY spotted, and the inevitable gripe from someone who is forced to surface with over 500 pounds of air in his tanks after 90 minutes at 80 feet. How does he do it? Doesn't he breathe? You're sure there is a trick to making your air last longer, but no one has told you what it is.

The trick is to understand the dive in terms of how hard you are working during its various phases. Underwater exertion burns up air. The harder you work, the faster you use air and the faster it will be gone. The answer is to visualize each trip in three parts (before,

during, and after the dive) and analyze the work involved to eliminate excess effort.

Exertion begins when you carry your gear aboard the boat. For some the boat ride can be tiring in itself, especially if the seas are bumpy. Work continues as you rear up and enter the water.

The excitement of diving a new site, the work of getting your gear on, and the boat trip all play a predive part in air management. Divers experiencing problems need a system to constantly remind them to conserve energy. Personally, I keep my act clean with S-O-A-P. Keeping the acronym S-O-A-P in mind helps me review, remember, and most importantly apply energy-saving ideas on every dive.

S-O-A-P stands for Submerge (or immerse, Observe, Assess, and Practice. Repeat it to yourself frequently to remain aware of the need to reduce both physical and mental work and, therefore, prolong your air supply. For instance, *Submerge* (immerse) your mind in dive preparation the night before the trip. *Observe* what you need to do to prepare your gear; *Assess* the completeness of your preparation; *Practice* getting your gear ready in the most efficient way for each dive.

On the boat and over the dive site, *submerge* (immerse) yourself in evaluating the dive companions you have been thrown together with, *observe* what they do and how they do it, *assess* who you want to stay away from, and

(Please turn to page 60)

Richard Easton, M.D. is a graduate of the University of Kansas Medical School and the Harvard University School of Public Health. He is presently collaborating with his wife Fran, a Doctor of Psychology on a book tentatively titled, Diving Secrets: Essential Keys to Diving Fun and Safety.

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A Mile High and **CRYSTAL CLEAR**

*Lake Tahoe is a gem of a dive
site high in the Sierras.*



BY JONI DAHLSTROM

Photos by Adam Zetter

The three divers strapped on B.C.s and pulled fins over their booties. The boat barely rocked in the sheltered bay. Surrounded on all sides by walls of rock several hundred feet high, with pine trees on the ridges and ledges at the top, the site was completely sheltered. There was a narrow gap in the rock walls at the far end of the bay, and through it the divers could see the open waters of Lake Tahoe and in the distance, more mountains on the far side. One by one, the divers entered the water, with a back roll off of the small boat. Beneath them was an intact sunken barge, with bottles, plates, and all sorts of shipboard debris scattered over the sand.

The depth was practically impossible to guess as the crystal waters of the lake made the wreck seem more vivid and closer than it was. Each detail appeared sharper and crisper than it could have topside. Even if the barge had been 80 feet deep, the divers felt that they still could have seen the tiny details of every hinge and screw from the surface. The actual depth of the wreck ranged from five to 35 feet, at the point where they dropped onto the barge it was about 25 feet.

At more than 6,000 feet above sea level, Lake Tahoe, which forms part of the boundary between California and Nevada, is not often thought of as a dive destination. Tahoe is more commonly associated with its great ski resorts and casinos. Yet, it is a great dive spot.

The beautiful mountain lake is set in the high Sierra Nevada Mountains. Even Mark Twain couldn't resist describing the water as "not merely transparent, but dazzlingly, brilliantly so." Beyond the clear water, which is free of current, surge, and salt that has to be rinsed from your gear, diving in a deep freshwater lake is completely different from anything the ocean can offer. It isn't merely the change from marine to aquatic life, or salt to fresh water, or the high elevation; Tahoe is unlike anything most divers have ever experienced.

"Take the Rubicon Wall for example," said Neal Melton, owner of the Diving Edge. "I took a group of advanced divers off there yesterday, and it was so awesome. I mean, there you are on this ledge at 80 feet and directly below you is another ledge at 110 feet, and you know you can't go down there, you just can't. And beyond that ledge, the wall drops off for what looks like forever. The lake is over 1,000 feet deep. I think this

is different from diving walls in the ocean, because there isn't a lot of stuff growing on it. There is nothing to hide the fact that this wall just drops down farther than you can go."

Tahoe divers can choose from several walls and a number of dive spots with bizarre rock formations. There are also the wrecks of barges and pleasure boats, sunken planes, old piers, and Indian rock paintings. Divers can swim within schools of kokanee salmon, or harvest bags of delicate crawfish for dinner. There are also many spots with antique bottles, and what amounts to scads of historic debris. Since diving is a relatively new sport in the lake, most of the diving areas are still pristine. Underwater Tahoe remains an unspoiled dive destination.

gathering into schools off of ledges often within a hundred feet of the surface. For a few months, the fish are less timid as they prepare to migrate up the rivers to spawn. During this time, they make great photo subjects. Kokanee are merely small landlocked sockeye salmon. Since they cannot migrate to the sea, they settle for the lake. Divers cannot spear game fish in the lake, which means no trout or salmon.

"The real time to dive," said Melton, "is during a full moon. Tahoe just comes alive then. You seem to get a lot more life out at night, and the moon is so bright, it's almost like daylight down there."

The first thing any diver who is used to the ocean is likely to notice about Tahoe, is that the rocks and sand are



Paddle boat sets off on lake excursion.

Contrary to what most divers would think, Tahoe can be a year-round dive spot. In fact, a winter or spring trip provides the perfect chance to dive, snow ski, and catch a few casino shows in a single vacation. Though the lake never ices over, it still gets cold. Winter temperatures can drop below 40 degrees and dry suits are essential. By the middle of summer, the surface waters of the lake will have warmed to about 70 degrees; comfortable for regular wetsuits.

The water is at its clearest during the winter. Late summer, when the water is warmest, is the time to see lots of aquatic life. The algae bloom causes freshwater shrimp, crawfish, trout, and salmon to move from deep to shallower waters.

Freshwater fish like trout and salmon are wary of divers. Most of the time it is tough to get close to them. However, by August, the kokanee salmon will be

fairly barren. There is usually a layer of algae on the rocks, but nothing like marine algae. It is a different type of environment; look close and you can find all sorts of snails, worms, crawfish, and clams, not with the size and abundance of a marine ecosystem, but there is life on the lake bottom.

Though game fish are off limits to hunters, Tahoe holds an incredible harvest, crawfish; also known as crawdads or crayfish. They look like tiny clawed lobsters, and though smaller, they taste every bit as good. This may be the most widespread and overlooked food source in the United States. Crawfish of one species or another, are found in almost every lake and river in North America. The larger adults in Tahoe are usually more than three inches long. It takes a few to make a meal, but there is no closed season and no bag limit on crawfish. Catch a few handfuls and cook them Cajun style.

(Please turn to page 51)

The writing/photography team of Joni Dahlstrom and Adam Zetter is based in Santa Barbara, Calif.

One of the better food trends to recently sweep the nation is Cajun cooking from Louisiana. Not only is this one of the finest forms of cuisine native to North America, the dishes are perfectly suited to freshwater divers.

Cajun cooking is one of the few cuisines that features species like crawfish and carp, both of which are found in almost every freshwater body of water in the United States. Crawfish are also called crayfish and crawdads, but they look like tiny clawed lobsters, and their taste is even more delicate than their larger saltwater relatives. American crawfish range in length from one to three inches. Tasmanian crawfish on the other hand, can top eight pounds. It takes quite a few of our

native crawfish to make a meal, anywhere from six to 12 per person, but there are no limits or closed seasons in most states.

The part of the crawfish that is eaten is the tail. They can be shelled before serving, or serve them whole and let your guests crack them open.

For authentic Cajun recipes, we talked to Louzel Rogers, owner of Dixie's, a gourmet Cajun/creole restaurant in South Lake Tahoe. Louzel lived in the French Quarter of New Orleans for many years, and spent most of her life in and near Louisiana.

"In Cajun and creole cooking, we base a lot of our recipes on what we call, the 'holy trinity,'" said Louzel. "That is onion, bell pepper, and celery. Almost all of our recipes use all three items."

"This cuisine has its roots in French

cooking, tracing from the Arcadians who settled in Louisiana. And it also has strains of Spanish, since Louisiana was held by the Spanish for a longer time than by the French. And then the slave trade based in New Orleans brought Caribbean and African elements. It is a very good and very rich cuisine when done properly."

Louzel's Crawfish Cajun Popcorn is a tasty appetizer, while the Crawfish Etouffe makes a delicious main course. These are both authentic recipes, prepared the way they should be in the South. We have also included a very basic recipe for serving crawfish in their own juices. For the recipes that require only the tail meat, cook the crawfish as described in the Simple Crawfish Recipe, then remove the meat from the tails after the crawfish are cooled.

Crawfish Etouffe

SEAFOOD SAMPLER

Cajun Popcorn



BY JONI DAHLSTROM

Celebrating CRAWFISH, CRAYFISH, AND CRAWDADS



Found in most bodies of fresh water, these small cousins of the lobster are perfect for Cajun cooking.

Simple Crawfish— Crawfish A La Nage

Clean the crawfish while they are still alive. To do this, pull out the tail fin, with a long pull, to remove the stomach and intestinal vein. When they are cleaned, place the crawfish in a pot of boiling water, seasoned with the white part of a leek, a handful of fresh parsley, 1 chopped carrot, and 3 tablespoons of vinegar. Don't cook longer than five to seven minutes.

Serve piled high on a plate, with melted butter for dipping on the side.

Crawfish Cajun Popcorn

Cleaned cooked crawfish tails six to 12 per person, about a pound, following Simple Crawfish Recipe.

- 1 cup flour
- 1 egg
- 1 cup of milk
- $\frac{3}{4}$ teaspoon garlic powder
- $\frac{3}{4}$ teaspoon paprika
- $\frac{1}{2}$ teaspoon white pepper
- $\frac{1}{8}$ teaspoon cayenne pepper
- $\frac{3}{4}$ teaspoon salt

In a small plastic bag, combine $\frac{1}{2}$ teaspoon of salt, $\frac{1}{4}$ teaspoon of white pepper, $\frac{1}{8}$ teaspoon cayenne pepper, $\frac{1}{2}$ teaspoon paprika, $\frac{1}{2}$ teaspoon garlic powder. Add crawfish to bag and shake to coat with seasoning. Add 1 cup of flour to the bag, shake to coat. Remove crawfish, save the seasoning mixture.

Mix 1 egg with 1 cup of milk in a small bowl. Add $\frac{1}{4}$ teaspoon salt, $\frac{1}{4}$ teaspoon garlic powder, $\frac{1}{4}$ teaspoon paprika, and $\frac{1}{4}$ teaspoon white pepper to milk mixture. Place the crawfish in the bowl, then drain the milk mixture. Place the crawfish in the seasoning mixture in the plastic bag again, and shake to coat. Each should now be individually coated.

Drop crawfish in vegetable oil, preheated to about 375 degrees. It should be very hot. Cook until golden brown, this only takes a few minutes. Do not overcook.

Crawfish Etouffe

- 2 pounds of cleaned crawfish tails
- $\frac{1}{4}$ cup finely chopped onion
- $\frac{1}{4}$ cup finely chopped celery
- $\frac{1}{4}$ cup finely chopped green bell pepper
- $\frac{1}{4}$ cup finely chopped parsley
- 1 cup finely chopped green onion
- 3 cups chicken stock
- 8 teaspoons vegetable oil
- $\frac{1}{2}$ pound unsalted butter
- $\frac{3}{4}$ cups flour

Seasoning Mixture

- 2 teaspoons salt
- $\frac{1}{4}$ teaspoon cayenne pepper
- $\frac{1}{2}$ teaspoon white pepper
- 1 teaspoon black pepper
- 1 teaspoon sweet basil
- $\frac{1}{2}$ teaspoon thyme

Combine seasonings in a small bowl, and set aside.

Begin by making a roux. In a large heavy skillet or pot, heat the oil until very hot. Stir in flour, you must stir constantly, cooking until the mixture turns a brownish color. Do not let it burn. Remove from heat, stir in all the vegetables, except the green onions. Add one tablespoon of seasoning mixture.

Bring 2 cups of stock to a boil. Gradually add the roux and vegetables to the stock. Stir constantly until dissolved, about two minutes. Remove from heat.

Place 1 stick of butter in a saucepan and melt over medium heat. Stir in crawfish and green onions, cook for two minutes. Add the other stick of butter and the final cup of stock to crawfish. Stir and cook until sauce is smooth, about five minutes. Add remaining seasoning mixture.

Combine crawfish mixture and vegetable mixture and simmer for 5 minutes.

Serve over hot rice.

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Nine advanced students at the Divers Institute of Technology in Seattle, WA, rig a diver in a Mk-V helmet and provide air with a Mk-III hand pump to show how it was 50 years ago.

BY E.R. CROSS



Illustration by Nick Fain

THE WAY IT WAS

The art of going underwater and remaining for a considerable time." That's what diving is all about. But there are tremendous variations in this straightforward definition of diving; time underwater, reasons for diving, sport or commercial, equipment used, and many others. *The Way it Was* researches, reviews, and comments on the broad range of all past diving events, be they technical, historical, or side splitting comicalities. Your comments, suggestions, photographs, or questions about the way it was in the yesteryears of diving are welcome. This is *your* column too. Address any inquiries to: Aqua-Field Publishing Company, 66 W. Gilbert St., Shrewsbury, N.J. 07702.

The Winter of 1934

In early January, 1934, the salubrity of San Diego's climate was being badly tarnished by a cold wind and drizzly rain. Although not recognized at the time, I was being introduced to a career I was destined to follow for the rest of my life. This is the way it was on that blustery day in San Diego.

If the days in "boot camp" (daze would be more appropriate) can be called a tour of duty, I had just completed my first of several tours in the United States Navy. It was still morning and I was waiting for a motor launch from the *U.S.S. Dobbin* (AD-3).

Everything I owned was sitting beside me on the pier at the Naval Training Station, San Diego, California. My hammock, shining from the energetic application of scrub brushes and salt-water soap, was wrapped tightly around my skimpy mattress, two blankets and a

E.R. Cross is a pioneer in the field of diving. He has been associated with the sport for 55 years. Mr. Cross served as a U.S. Navy diver during World War II and the first two Bikini atomic bomb tests. He later operated the the first commercial diving school and worked for Chevron in Hawaii until retiring in 1985.



Photo courtesy of the Divers Institute of Technology.

pillow. My seabag full of freshly scrubbed clothes fit snugly into the tightly rolled bundle and was lashed in place with the shrouds of the hammock. All my worldly possessions were getting wet. I was getting wet and I was cold and more than a little irritated.

The boat from the *Dobbin* finally arrived. A 50 motor sailor, which is a boat with no sails, no cover and no protection from the rain or splash of waves soon headed into the wind toward my future home afloat.

The *U.S.S Dobbin* was a nearly new destroyer tender. She was basically a floating supply, repair, refueling, and service base for a squadron of 13 destroyers. We did everything for those speedy "tin cans" except fire their torpedoes and lay their depth charges. In the months to come, I found that wherever our "cans" went, we were sure to follow.

We made the after gangway on the starboard side (the port side of the vessel was occupied by a bunch of destroyers). I shouldered my soggy possessions and climbed the steep, slippery, and swaying gangway to the main deck. I had been briefed on Navy etiquette when boarding a vessel. At the

top of the gangway I stopped, faced aft, and smartly saluted the colors. I then saluted the officer of the deck, thinking he was at least an admiral. I think I said, "Sir, I request permission to come aboard, sir." I found out later the real officer of the deck was in the wardroom having coffee and the man who met me at the gangway was the quartermaster of the watch; a chief petty officer with many years of service and all of them with good conduct. He could wear gold rank insignias and gold hash marks from shoulder to wrist on his left arm. Very impressive. But I was only slightly subdued and still irked at getting wet.

The "admiral" took my transfer papers, signed me aboard, and directed me to my billeting station. To reach the mess deck where I would stow my hammock and clothes for the next several months, I had to go down one deck and then forward to about amidships. The passageway on the deck was narrow. Probably halfway to my assigned station, one of the shrouds of my hammock caught on the handle of a piece of equipment lashed to the bulkhead. Still somewhat peeved, I gave the hammock a yank and said something to the

effect, "What is that damned thing?" Little did I dream how well I would get to know that "thing" in future years.

The master at arms, a tough old bos'n's mate I would get to know better and like more than I did at that moment, showed me where I could spread out my clothes and bedding to dry. He did not, by the way, wear gold hash marks and insignia. He probably earned and deserved his red ones. Then he showed me my new "home" from forepeak to steering engine room; from bridge deck to bilges. No space was omitted. The inspection was completed at the forward bos'n's locker. By then I was a slightly dazed seaman second class (my promotion from apprentice seaman had taken place two days before). I had no idea a ship could be so big and so confusing—or so embarrassing. When the chief told me to report for work assignment to the forward (he pronounced it "fored") bos'n's locker, I started aft. Such was my first day on board the *Dobbin*.

The next morning I was assigned to a deck crew whose cleaning station was just forward of the gangway. In addition to the wooden deck that had to be kept shiny-white by weekly doses of

holystoning, there was a lot of equipment with what appeared to be tons of brass to be shined daily. One such piece was the "thing" on which the shrouds of my hammock had fouled. It was a box-like piece of equipment about 30 inches square by perhaps 48 inches high. Axle stubs protruded from opposite sides. Its dozen brass plates and fittings had to be shined daily.

Perhaps two weeks later I was giving this equipment my best brass polishing routine when two men in working (for some reason called "undress") blue uniforms approached. Each man wore a small blue and white embroidered insignia sewn on the left upper arm of their uniforms. They thought I was pretty naive when I had to ask them what the insignia indicated. Since the insignia was obviously a diving helmet perhaps they were right. However, I could have told them we didn't have very many divers on the cattle ranch I worked on in southeastern Oregon before I signed up in the Navy. In any event, they did add to my limited store of knowledge about things Navy when they told me the device with all the brass was a hand pump for supplying air to divers while they were working underwater. They also told me most of their diving was done with air supplied by that hand pump.

A few days later, the divers came by again and I was assigned to help them perform routine maintenance on the hand pump. This was a standard, Navy Mark III, two-cylinder pump. The wooden box part of the pump system housed the cylinders, pistons, connecting rods and water reservoirs, and the valves and fittings for air hoses. The entire assembly was secured in a cast-iron frame.

Two huge wheels were bolted to the steel bulkhead over the pump. They were flywheels for the pump. Made of cast-iron, each weighed 250 pounds. They were mounted to the stub axles, one on each side of the pump. When used to supply air for diving, two

handles about four feet long were secured, one to each flywheel. While divers were down, a crew of six men, three on each of the handles, turned the flywheels, the crankshaft and the pumping system. For deep work, there were three such six-man crews. They were rotated every 15 minutes and if everybody pumped hard, a diver could work at a depth of 90 to 100 feet with adequate air.

Perhaps a month later, I spent my first day on a diving job. My divers were going to inspect the propellers on one of our "cans." The diving would be conducted from a 50-foot motor launch moored alongside the destroyer. A diving manual had been loaned to me by one of the divers. I knew where everything went and was "sort of" in charge of the deck crew assisting with the underwater inspection. I was also one of the crew that manned the pump to provide air for the divers. It was about this time that I decided the divers had the better part of the deal when compared to the pump crews. I determined to change my status as quickly as possible.

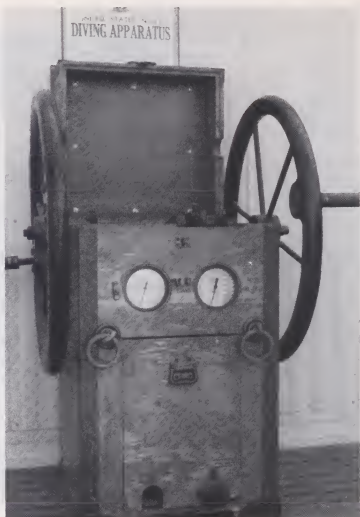
By hard work, attention to keeping

every piece of diving gear in brilliantly shining condition, a great deal of study and a lot of dressing in and out of full helmet gear and "dry dives" in the diving locker, I passed the tests required to make an actual dive in the harbor. I soon made that qualifying dive and was designated a diver second class. I could wear a blue and white diver patch on my left sleeve. No matter that it had a small 2 (for second class) in the center of the breastplate.

In July, 1934, six months before my 21st birthday, at Kure Island, the westernmost atoll in the Hawaiian chain, I made my first open-water dive. One of our cans had fouled an anchor and we were called on to help in clearing it.

Following the last dive, I was decompressed for a few minutes at the 10-foot stop. My thoughts went back a few short months to my first wet, wintry day on the *Dobbin* when my hammock shrouds got tangled on the axle stubs of the diver's hand pump. I wondered, "Has anyone ever got hooked on diving quite the way I did." Probably not. But, for me, that's the way it was, 55 years ago, in the winter of 1934.

S



A Navy Mk-III hand pump like the one used by the author for his first dive.



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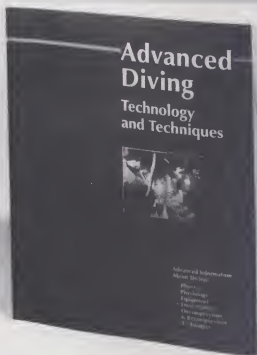
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PRINT IT!

Unless publishing or slide shows are your goal, using color print film has many advantages.

Are you tired of making excuses because prints made from your underwater slides are disappointing when compared to the slide? Was it too dark that day or were you too deep to get good ambient light or is it that the photo store just can't seem to get the colors right? All of these reasons are probably true to some degree, but the fact is, unless you are making color separations from your slides, they simply aren't going to look like the ones in the magazines because they aren't made by the same procedure.

Since most underwater photographers are hobbyists, it seems unnecessary to adhere to strict "professional" standards if your goals are not the same as theirs. If your goal is to decorate your home or office with your own underwater photographs, here are some suggestions that may help you improve your enlargements and still have perfectly acceptable slides if you want them.

The key is abandoning traditional 64-ASA slide film and switching to print film instead. In general, superior prints can be obtained from negatives when compared to prints made from slides. The new print films are much finer grain than those available in past years, and enlargements up to 20x30 inches can be made with very little visible grain. Prints of this size made from slides, especially when strobe photography is used, will have a tendency to lose details in the light and dark areas. You will find that print film will produce a more uniform image with even lighting and less contrast.

If you go to a print film in the 200-ASA range, you will gain one and one half f-stops over 64-ASA slide film. If you consider that the exposure range for print film is at least a stop and a half on

each side of the advertised speed, you can gain at least 2 full stops over 64-ASA. This can be especially important when working deep. Since exposure calculations are not as straightforward as they are at shallower depths, you can afford some mistakes and still produce good results. You also have the added advantage of having more depth of field with the higher f-stops, and it's also easier to balance your photo with ambient light.

Slides of excellent quality can be made from your best prints by simply having your local photo store copy your 3x5-inch prints with 200-ASA Ektachrome. You have the convenience of prints, and you can still have a satisfactory slide made. Granted, the slide quality will not be as good as 64-ASA Kodachrome, but the quality is still good enough in many cases to be used for color separations if you want to publish.

Cropping is also easy if you only want to use a portion of your print. You can even crop the picture and then make a slide from the cropped print. Most stores can handle blow-ups like this with little trouble.

Editing is much easier than with slides; just spread the prints out on the table and ask your wife for an opinion. She'll be much more helpful than if you had run everyone out and set up the slide projector. Carry the prints around in your pocket and ask your friends for their opinions; it's much easier than having the dive crowd over to view slides.

Before plunging into a new photography format, be certain as to what your ultimate goals are. If you are determined to publish, stick with slide film. There is no argument that superior transparencies can be obtained, and most publishers would rather deal with slides. However, if your goal is to surround yourself with your own photography, you may see significant improvement by using a film designed specifically to meet that goal.

\$

Bill Mansfield is a former research biologist with the University of North Carolina at Wilmington and a 24-year veteran of diving.



*The photos
shown were
originally taken
on color print
film.*



BY DONALD WHITEHEAD

Being a professional underwater photographer sometimes means having to see the world in black and white. It comes with the territory. The recreational photographer sees the underwater world in spectacular color and wants to capture it that way. Rarely, if ever, does the amateur shoot black and white.

This is understandable considering the investment of money, time, and effort required for this highly specialized form of photography. So why shoot black and white when the undersea world is vibrating before your face mask in vivid, living color?

Primarily because there is a substantial cost savings. It's often said that film is the cheapest part of making good photographs. The more you shoot, the better your chances for great pictures even if only by sheer luck and weight of numbers. With prices being what they are today, black and white is definitely the cheapest way to shoot lots of film.

There's also a great margin for errors in exposure, faster film speeds for low light and the convenience of viewing the final product in print form.

When selecting a film, there are only two end products to consider: slides (transparencies) and prints. Slides are great. Their brilliant colors are dazzling up on the big screen. But projection has its drawbacks. The machine has to be set up, as does the screen. Once to slides are viewed; everything must be put away. It's also hard to keep an audience's attention in a darkened room for more than 20 minutes unless they are featured in the pictures.

Projection will also degrade and eventually destroy a slide over a period of time because of the intense heat and radiation of the lamp. This is why professionals never use original slides for their shows. Slides are also not archival. The image deteriorates over the years even if it is never projected. The maximum life of an original transparency is between 30 and 50 years. So if a photo is worth seeing again and again, and the best ones always are, then the print is the only choice. Matted, framed and hung on a wall, they can be effortlessly viewed. Their accessibility makes for frequent and longer viewing—long

Donald Whitehead is the former publisher of a Northeast coastal dive magazine. He is a free-lance writer and photographer living in Salem, Mass.



CHEAP SHOTS

Black and white photos are not only inexpensive, they give the photographer a wide range of options.

enough to quench the thirst for inspiration or pride of accomplishment. Year after year they'll be there to be enjoyed.

Having selected the print medium, the photographer is then confronted with the choice between color and black and white. Color is generally (though not necessarily) more exciting, but, as if diving weren't expensive enough, color printmaking can be expensive when you get into enlargements.

Black and white to the rescue! Let's do some comparison pricing. We'll use the 35mm format for our comparison since it's the most popular among underwater photographers and produces professional results.

Now you can get some inexpensive prints from the local quick-print people in the booth in the supermarket parking lot but that's not worthy of your best efforts. An outstanding shot deserves the attention of a custom lab.

For display purposes, an 11x14 inch print works well so we'll use that size for our comparison. Our total price includes film, film development, an 8x10 contact print (from negatives), and the 11x14 custom print.

There's a few different ways to make

a color print depending on whether you shoot slide or negative film but the price works out to be about the same. The bottom line for the 11x14 inch, custom color print is \$55-\$60. For the 11x14 inch, custom black and white print the cost is only \$29. These prices are taken from a random sampling of custom labs and are intended as a guide only. However, as a general rule, black and white is about half as much as color no matter where you have the work done.

It's important to understand what a contact print is and how to use it to select images for enlargement. Contact prints are made by sandwiching film negatives between photographic paper on the bottom and a sheet of glass on top and then exposing it to a light source. The positive image formed on the developed sheet is exactly the size of the negatives and all 36 frames are "contacted" on a single 8x10 inch sheet. Slides don't need contacting since they're already a positive image, that is, what appears on the film is what you saw when you clicked the shutter.

So now you have 36 little pictures on an 8x10 sheet, each one not much bigger than a postage stamp and you have to



The silhouette photo, above left, was taken with a modest rangefinder camera in a plastic housing. Kodak Plus-X film was exposed at the rated speed of ASA 125. The spotted skate, above, is about 3½ feet in length.

decide which of them to enlarge. You probably won't want them all enlarged because they won't all come out that good (no offense intended, the pros have a success ratio of about 40 to 1).

To make your selection, carefully scrutinize each frame with an (inexpensive) 8x magnifying glass called a photographer's loupe. Any imperfections such as fuzziness or bad composition will be readily apparent.

When you've chosen the frames you want printed, use the loupe to scrutinize those negatives against a strong light being careful not to get any fingerprints or scratches on the film. Handle the film only by the perforated edges. Check for critical sharpness which will be more noticeable on the film than on the contact print. Select only the sharpest negatives because when the image is enlarged, so are the flaws. Doing your own enlargements is a great hobby and with experience you can produce excellent prints for the cost of the paper.

Another advantage to shooting black and white underwater is the faster film speeds available. This allows for photography in low light without flash or with low power settings on the flash

saving the charge on the battery and prolonging its life. The 510-volt battery used in my strobe cost as much as \$30, so I'm always trying to conserve the charge.

Some of the photos accompanying this article were made without flash which I sometimes prefer for a more natural rendition of the scene. Artificial light sometimes looks very artificial. Available light photography frees me from having to lug around a heavy, bulky strobe. I believe in streamlining my diving and photo gear to the irreducible minimum for a more comfortable and safe dive (and a less weary diver).

Existing light photography underwater is best done with black and white since there are no color shifts or bluish casts that always appear in color, especially the faster color films. Black and white can also be shot at greater depths and in lower visibility because of its ability to be "pushed."

Pushing the film is a trick used by photographers in dim light. The film speed on the light meter is set higher than the film manufacturer's rating. This requires special processing for a minimal extra charge, but provides a two-to-eight times increase in film speed. The negatives will gain contrast and graininess proportionate to the amount of push and will lose some shadow detail. This can be minimized with high-speed, fine-grain developers. Unfortunately, the lab isn't likely to offer them because the combinations of films and developers are too numerous.

I recommend that serious photographers do their own black and white film developing at home for greater image control. It's easy, inexpensive, and produces the best negatives, but it involves a technical discussion beyond the scope of this article. Check your photo store or library for source material on film processing.

Black and white films also have a greater exposure latitude than color. Commercial labs can do a lot to compensate for over- or underexposed negatives in the printmaking process, much more than with color. So, if you have a tendency toward inaccuracy or the excitement of the dive eclipses your judgment, there is a greater chance of saving that once-in-a-lifetime shot.

These films also keep better over time. I once exposed a roll of black and white and promptly misplaced it for a year and a half. When found and developed some 18 months later, the images were as crisp as if shot yesterday. The important thing is to keep film free from humidity, which is more damaging than temperature changes.

One last technical point. I do not recommend the use of filters when

shooting underwater in available light. Filters work by subtracting, not adding light. This only serves to reduce the overall amount of light reaching the film when there is little enough light to begin with.

The underwater environment is one of the toughest on earth to get consistently sharp photographs. Available light is often dim especially in colder waters where plankton concentrations are high and the sea takes on the consistency of bouillabaisse. Don't let that stop you.

Some of my best photos were taken in the North Atlantic with visibility of only 12 feet! The rule of thumb is to shoot within one fifth of your visibility. A good wide angle lens will focus at a distance of two feet or less and close-up and macro lenses down to less than one foot, but you must choose your subjects well.

Pushing the limits of photography is often the key to successful underwater pictures. Some may criticize the side effects of these techniques but these are underwater scenes not studio sets. People expect them to look different. Pictures actually benefit from the higher contrast and graininess of pushed film. It frequently enhances that eerie "other-worldiness" associated with shipwrecks and denizens of the deep and adds punch to flat, dimly lit scenes.

There is much more to be said for black and white photography underwater but like anything else, a steady diet of it will dull the appetite. Save it for those times when money's tight or the sea is like soup and it can make the difference between having photos or having none. It's a challenge, it's a discipline and it all depends on how hungry you are. The intrepid diver-photographer on a budget will feast his eyes on enduring images of submerged places untrampled by the masses and often unappreciated until rendered in their most basic form.

S

This hermit crab photo is a close-up shot taken with flash at 40 feet in Massachusetts using Kodak Plus-X exposed normally (ASA 125) and developed in Kodak Microdol.





Well off the beaten track,
good dives can be found.
northernmost of the G

BY M. TIMOTHY O'KEEFE

ST. VINCENT Worth the Effort

St. Vincent is one of those islands divers visit only rarely because, compared to many other Caribbean destinations, it is not particularly easy to reach. A lush, oval-shaped island only 18 miles long by 11 miles wide, St. Vincent is the northernmost of the fabled Grenadines, long acknowledged by yachtsmen as one of the world's most perfect cruising grounds.

St. Vincent, as agriculturally rich as its more famous neighbor, Grenada, appears to offer even better, more varied diving than Grenada. Moreover, the 31 other islands to the south of St. Vincent are virtually unexplored as far as diving goes, providing one of the last spoiled areas of the Caribbean. St. Vincent and the Grenadines are definitely worth the extra trouble it takes to get there.

Aboard the Dive St. Vincent dive boat, we were enroute to the Falls of Baleine, a magnificent waterfall in a section so remote it can only be reached by boat. It is so out of the way that perhaps 80 percent of St. Vincent's own residents have never seen the falls. Dive St. Vincent considers the day-long falls trip to be its most popular, sending at least one boat there nearly every day. As part of the trip, we would stop to drain a tank or two.

I boarded the boat at Young Island, a 35-acre resort island located just 200 yards from the southern end of St. Vincent and the Dive St. Vincent shop. The only other major dive operation, Mariners Watersports and Scuba Center, is located here as well. Also a full-service dive operation, Mariners offers crewed sailboat charters for those who want to more fully explore the Grenadines.

The boat trip to the falls took us past most of St. Vincent's major points of in-

terest. The first was Kingstown, the capital city and a very busy port. It is home to about one-tenth of St. Vincent's total population of 117,000.

Anchored all along the city shoreline were long, motorized boats similar in design to the canoes of the ancient Arawak Indians. The Arawaks were actually the second Indian group to inhabit the island, replacing the Cibones, whose history on St. Vincent dates to 4300 B.C. The Cibones eventually moved to Haiti and Cuba, where they were decimated by the Spanish in the 1500s.

The Arawaks themselves were subjugated by the fierce Carib Indians, who held St. Vincent until 1627. The Caribs intermarried with the slaves brought over from Africa to work the sugarcane, a racial mix that accounts for the heritage of most present-day Vincentians. In my dealing with the people, I found them friendly and hospitable, perhaps because few large cruise ships dock here and the introduction of tourism has been fairly gradual.

As we cruised past Kingstown, it was easy to spot the brightly colored minibuses that provide the island's taxi service. The taxis bear such descriptive names as "Ju Ju," "Swazo," "Float On," and "SCOTTY (beam me up!)" on their fronts. These taxis are the island's best bargain. For between 50 cents and a dollar, they'll take you all over the downtown area.

Kingstown is renowned for its Botanic Gardens. Founded in 1763, the gardens are the oldest in the entire Western Hemisphere. The most famous attraction is a cutting from the original breadfruit tree brought from Tahiti by Captain Bligh after the famous *Bounty* mutiny. Understandably, St. Vincent carries the nickname of "The Breadfruit Isle."

Just past Kingstown is Fort Charlotte.

(Please turn to page 72)



a variety of
on this
Grenadine Islands.

INTRODUC

The Longest-Casting Spinning

No other spinning outfit on earth casts as far as the new Aero Performance Matched spinning rods and reels from Shimano. And for one simple reason:

Because no other spinning outfit on earth was designed to virtually eliminate FRICTION—the single greatest enemy of long casts.

There are three Aero Systems to choose from: the BeastMaster™ GTX Aero System, the CX SpeedMaster™ Aero System, and the TX Aero System.

▲ AeroBlanks™ are constructed from Graphite, so they're incredibly strong and remarkably lightweight. And, to reduce the friction of air resistance when you cast, AeroBlanks have a computer-designed Aerodynamic shape that enables them to cut through the air like a knife.

So virtually every ounce of casting power is transmitted to the tip. And through to your lure.

ATTENTION BIG WATER ANGLERS: All Aero 8-12A models come with smooth front drags to tame the biggest fish.

AeroGuides™ have higher frames than ordinary spinning rod guides. And smaller rings. So they prevent line from snapping against your rod blank during your cast—

the primary cause of casting friction. (See illustration on opposite page.) And AeroGuides are only available from Shimano.

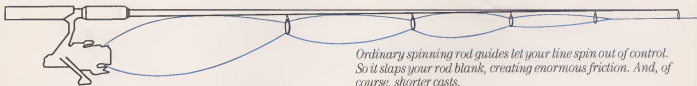
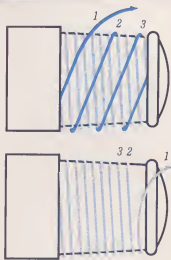


ING AERO.™

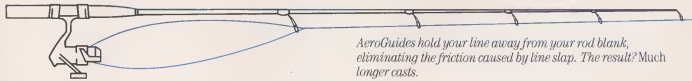
Rods And Reels Ever Invented.



Shimano's exclusive AeroWrap™ system eliminates distance-robbing line-against-line friction when you cast. How? By automatically wrapping your line in layers—one layer of line far apart, the next layer of line close together. When you cast, the widely-wrapped line comes off the spool from back to front. Since there's plenty of space between each loop of line, they can't rub against each other and create friction. The closely-wrapped line comes off from front to back. So when each loop of line comes off, the loop in front of it is already out of the way. AeroWrap also prevents each layer of line from digging into the one below it. The result is much less friction, and much longer casts. AeroWrap. Only from Shimano.



Ordinary spinning rod guides let your line spin out of control. So it slaps your rod blank, creating enormous friction. And, of course, shorter casts.



AeroGuides hold your line away from your rod blank, eliminating the friction caused by line slap. The result? Much longer casts.

Standard spinning reel spools are designed to create friction. Because line coming off the spool runs directly into the lip, then flies off in great, big, air-catching loops.

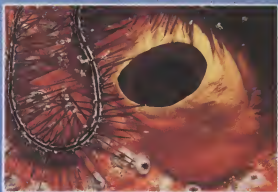
AeroSpools™ longer, narrower design eliminates this problem by letting line glide over the lip, barely touching it. So it flies off in smaller, tighter, friction-reducing loops.



Get Aero Performance Matched spinning rods and reels at a Shimano dealer near you. Because when it comes to making friction-eliminating, gravity-defying, World-Record-Breaking casts, absolutely *nobody* does it farther.



AERO SYSTEMS



Brittle star is shown on yellow boring sponge.



BY D. HOLDEN BAILEY

Looking around at the glum faces, I couldn't remember ever seeing such a depressed looking group of divers and snorkelers. When they talked at all, it was in hushed, subdued voices. Such despair was prompted by a very gray sky, with darker clouds hanging low over the water, as if poised for an assault. The farther offshore we went, the worse it looked. The weather forecast offered little hope for better conditions.

I'd decided to make the all-day trip because I had already been on Puerto Rico for a week and hadn't done very much diving. Actually, I hadn't planned to do a lot of diving. After all, Puerto Rico is hardly reputed to be the diving mecca of the Caribbean. Serious divers seldom see more than Luis Munoz Marin International Airport, the hub for air travel in the Caribbean. They change planes en route to their final destination with hardly a sideways glance at what could be the next state.

I had planned this trip mostly for sightseeing and photography, since the island isn't generally known to the diving world as a good place to get wet.

Well, ignorance may be bliss, but it

almost caused me to miss some really good diving. In today's age of advanced communications and marketing, it's hard to understand why so little has been done to get the word out to the diving world. Maybe it's just because there are so many well-publicized destinations.

We were over halfway to the deserted islands of Icos and Palomino, when the first ray of sunshine tentatively peeked through the clouds. The transformation of the group's mood from one of despondency to one of smiling hopefulness was a wonder to behold. Voices grew louder and I even heard someone laugh, as everyone started to act like vacationers again. As if encouraged by the effect of its solitary beam of light on our group, the sun kept increasing its strength, each ray shouldering through the dark clouds and pushing them aside until there were only a few white, fluffy ones left in a brilliant blue sky.

Thanks to the sunshine, we could now clearly see the reef below, as if it had suddenly, magically sprung into existence. Fish could be seen swimming among waving, purple sea fans. Mounds of green brain coral and stands of golden elkhorn coral contrasted vividly with the stark white of the sandy bottom.

Just ahead, one of the islands seemed

Divers usually see Puerto Rico only as a gateway airport to the Caribbean, but the island offers much more for the adventuresome.

D. Holden Bailey is an Ohio-based writer. He last wrote for Diving & Snorkeling on Puerto La Cruz in Venezuela.

BEYOND SAN JUAN

Diver accompanies nurse shark on its rounds.



to hover over the ocean floor, as if levitated by the clear water. From this distance, it looked like an emerald brooch, encircled by a wreath of purest sugar. As we drew nearer, the emeralds turned into palm trees and the sugar into sand.

As the group prepared to enter the water, roughly half were scuba divers, and the rest were snorkelers. I found it hard to believe these were the same people who had left the dock at Fajardo Harbor less than an hour ago.

This was not a great reef when compared to those off the south shore of Puerto Rico, but it was still better than I would have expected to find here. The reef was formed much like the spur and groove formations so common in the Florida Keys. Long, finger-like ridges of coral were separated by clean, sandy areas. Since we only explored down to about 30 feet, shallow water varieties of hard coral such as brain, star, and elkhorn dominated the reef. Large purple sea fans were growing everywhere they could find a bare, hard surface to anchor. Invariably oriented facing the slight current, they were as good as arrows to navigate by as they gently swayed.

Swimming past a colony of sea rods, I did a double-take as I noticed one branch had an eye. A closer look revealed a 3-foot trumpetfish, almost invisible as he hung vertically and motionless beside a gorgonian. If I had been a meal-sized fish, he could have easily inhaled me before I even knew a predator was nearby. As it was, his excellent disguise served its other purpose of protecting him from discovery by even larger fish. He remained absolutely still as I took a couple of photos. I then reached slowly for his tail, and, as always, just when I knew I was close enough to get a grip on it, he zipped out of reach with one quick flip of his tail, only to repeat his disappearing act in front of a nearby sea fan.

Back aboard the boat, while enjoying lunch in the sun, a beautiful trimaran approached the island, dropping her sails as she prepared to anchor. A party of about 15, mostly teenagers, joyously leaped into the shallow water. As I watched the youths cavorting in the clear water, luxuriating in its warmth, I compared this dive with ones I had taken on previous days off the south shore.

Near Lahas is the small village of La Parquera. Known only as a fishing village in years past, it has recently begun developing into a popular resort center. Clean, economical lodging is available in guest houses and in two Tourism Agency sponsored *paradores* (Puerto Rico country inns). One hour away, by boat, is Phosphorescent Bay,

where millions of microscopic, luminescent dinoflagellates impart an eerie glow to the water whenever it is agitated by any type of movement—boats, hands, or even fish. This rare phenomenon is best observed on moonless nights.

While waiting for the other divers to arrive, I lay on my belly on the dock of La Parquera. I was watching a small school of Atlantic spadefish accompanied by a solitary blue angelfish, swimming in the clear water beneath the dock. The captain said it rarely got



this clear this close to shore. The nearshore waters are dotted with numerous mangrove cays whose nutrients cloud the water, but the wind was blowing onshore.

Later, as we motored out to the first dive site, the water rapidly became even clearer as we left the mangrove area. The captain eased up on the throttle as we encountered ocean swells, and we settled back for a lazy 40-minute ride across the deep blue waters of the Caribbean.

Once at the dive site I was totally surprised by the reef we encountered. Large barrel sponges and many varieties of coral grew along the edges of small ditches that ran out to the drop-off, which was at about 70 feet. Here, the reef spilled over the edge onto a near-vertical wall. I later learned from the captain that this wall ran continuously for 20 miles. Below 70 feet, plate corals

dominated the surface of the reef.

Exploring my way back toward the boat, I saw the divemaster struggling with something underneath a ledge in one of the ditches. He triumphantly emerged with his arms full of shark! Even though it was only a nurse shark, I thought he was being a little foolish. A lot of divers have been bitten by *only* nurse sharks, invariably after antagonizing one in a similar manner. Even your Aunt Bertha's Siamese cat would probably bite a stranger who had the audacity to yank on its tail. "Oh well," I thought, "I guess I *could* take just one shot of the shark and diver, since he worked so hard."

There were many very good dive sites on this side of the island, and they get relatively little diving pressure, even though there are several well-organized dive operations in the area.

Fifteen miles offshore, about midway between Puerto Rico and St. Thomas, USVI, lies the island of Culebra. Many divers consider the diving around Culebra and its sister islands to be the best in the area. Declared a National Wildlife Refuge in 1909 by President Roosevelt, this area is a popular place for nature lovers, as well. There is at least one dive operation on the island, which features a live-aboard trimaran, and boats can be rented or chartered in the quaint little town of Dewey. Accommodations can be had in one of the modest, but comfortable, guest houses. Visitors can get there by ferry from Fajardo, or by small plane from the Isla Grande Airport.

When I turned my rental car in at the end of my stay, I was startled to find out that I had managed to drive over 1,000 miles in less than a week on an island only 110 miles long and 35 miles wide. Puerto Rico offers a diversity of places and things to explore. So much, in fact, that I never did get to all the places I wanted to visit.

Most first-time visitors start out in the San Juan metropolitan area, where the bulk of the island's population lives. A must-see is Old San Juan, a walled city steeped in history. There, for two days, I wandered around the narrow, blue-bricked streets, engrossed by the numerous shops offering jewelry, handwoven hammocks, fiery Puerto Rican rum, and many things I didn't even recognize. Also in this area is El Morro, a fort started in 1540 for the defense of the city. Many battles were waged over the centuries at this fort, and I could almost hear the cannons roar and the battle cries of the soldiers when I strolled through the remarkably well-preserved fort. White clouds on the horizon could easily be mistaken for the sails of an approaching armada. I imagined the long-dead defenders must

have made this mistake many times as they watched for something they hoped they wouldn't see.

"Out-on-the-island," as locals describe anywhere not in the San Juan area, I marveled at the many beautiful waterfalls I found in the Caribbean National Forest. In the only rain forest in the U.S. National Forest system, I saw tiny, button-sized orchids, pink impatiens, and white ginger complementing the rich green of the lush foliage. The air was colored by blue-winged Puerto Rican parrots, and the cheep-cheeping of the tiny *coqui* tree frogs was music to my ears.

TRAVEL TIPS

Dive Operations

Rates for diving here usually run from \$30 to \$40 for a two-tank dive. All-day snorkeling/diving excursions to one of the deserted islands offshore, including a picnic lunch, generally cost \$60 to \$80.

The San Juan Scuba Center is located in the Condado area of San Juan. This dive shop offers beach dives off the Condado Plaza Hotel for divers with limited experience, boat diving at nearby Molar Reef, and all-day snorkeling/shallow diving trips to the Icacas and Palomino Islands near Fajardo. Phone: (809) 721-1000, ext. 1361.

Located in Fajardo, The Scuba Shop runs 2-tank trips to dive sites in this vicinity. Phone: (809) 863-8465.

Coral Head Divers probably dunks more divers than any of the other dive operations on the island. It is located near Humacao in the Palmas del Mar Resort community, an area of luxury homes and condominiums one hour from San Juan. Phone: (809) 850-7208.

Better than a two-hour drive from San Juan, Parguera Divers is in La Parguera. Most of its customers stay on this side of the island. The reefs are much better developed in this area, and the water, being in the Caribbean, generally provides much better visibility than does the north side of the island, which is on the Atlantic. Phone: (809) 899-4171.

Caribbean Marine Services is located on the island of Culebra and offers boat diving from a 50-foot trimaran. Live-aboard trips can also

A large part of my mileage was run up semi-lost on the Panoramic Route, a simply gorgeous 165-mile network of 40 roads which wind along the mountainous backbone of the island. From the tops of tropical mountains, my eyes feasted on breathtaking views of the distant ocean. Colorful hibiscus grew wild on the sides of mountains leading down to tiny mountain valley villages. I stopped one morning before dawn, high on a mountain, and watched as one of these villages slowly awakened, emerging from the valley mists one twinkling light at a time. It was a sight I'll never forget.

be arranged. Phone: (809) 742-3555.

Where to Stay

Visitors can find a place to stay on Puerto Rico to fit any budget. Tourism sponsored Paradores (Puerto Rican country inns) are located in many areas of the main island, as well as on some of the islands offshore. Rates per night are generally in the \$35 to \$50 range for a room for two people. Reservations or further information can be obtained by telephoning (809) 721-2400 or (809) 721-2884. Guest houses, also located throughout Puerto Rico, offer rooms at similar rates. A full gamut of hotels and resort areas are scattered about the island, mostly in the coastal areas. Rooms can be had at bargain prices with package deals, or you can spend a mint and live like the rich and famous at one of the several luxury hotels and resorts. If you're feeling lucky, many of the hotels in the San Juan metropolitan area have casinos. Some of the largest are the Caribe Hilton, Clarion, Condado Plaza, Sands, Hyatt Regency Cerrromar, and Hyatt Dorado Beach hotels.

Major hotel rates range between \$110 and \$250 per room, per night.

Considerably better rates can be obtained if you shop around a little for package deals. TWA Airlines, for instance, offers seven-night stays at the Clarion Hotel and Casino, including departure tax and airfare from the gateway cities of New York, Miami, Philadelphia, or Washington D.C., for as little as \$469 per person, double-occupancy. Add-on rates for air runs from \$50 for East-Coast cities to \$200 for cities on the West Coast. Seven nights at the Sands Hotel and Casino start at \$659.

While walking on a perfect, palm-lined beach which seemed to run for miles with not another soul in sight, I stopped at the edge of the water and closed my eyes, facing offshore. This intensified my other senses, allowing me to savor the aroma of the salt water, its smell faintly tainted with the scents of faraway, unseen lands, the sun's warmth on my face, and the way the gentle breeze ruffled the hairs on my forearms, now blond from a week of tropical sunshine.

Puerto Rico is certainly more than an airport and a strip of high-rise hotel casinos in San Juan.

These rates are available during the off-season (mid-April through mid-December) and don't include a 6 percent government room tax, or a 15 percent service charge on food and beverages, which is sometimes added to bills.

All the major airlines service Puerto Rico.

Getting Around

There are a large number of car rental agencies located on Puerto Rico, especially in the San Juan metropolitan area. As would be expected, the large numbers make for keen competition between the agencies, which benefits the customers. Compact sedans, for instance, can be rented for as little as \$19.95 per day, with unlimited mileage.

More Information

Since 1917, Puerto Ricans have been U.S. citizens. Spanish is the primary language, while English is a strong second language.

The currency is the U.S. dollar. Credit cards are accepted nearly everywhere. Passports are not needed for U.S. citizens.

Bring light clothing, suitable for summer. The average temperature is 77 degrees with dependable easterly trade winds keeping the skies sunny most of the time. Casual dress is the rule, but some establishments require informal evening wear; this usually means jackets for men and dresses or dressy pants for the ladies.

Diving is good year-round on the Caribbean south coast, with water temperatures in the upper 70s to lower 80s. Visibility averages 60 to 100 feet. Off the Atlantic coast on the north side, diving is not as dependable, with visibility usually in the 25- to 30-foot range.

SCUBAPRO

Trivia Quiz

This is the second Trivia Quiz I have authored for SCUBAPRO Diving and Snorkeling. I invite your comments and to share in challenging other readers to answer our questions which may be about diving or related subjects. Questions must have valid answers. When submitting a question enclose the answer you think is correct.

Now, on with the Quiz.

1. In our ventures underwater, we often see a constant association between two distinct kinds of marine life. This is called symbiosis, a Greek word meaning "to live together." For five Trivia points, what are the three generally accepted states of symbiosis?

1. _____ 2. _____
3. _____

2. In one of the three symbiotic states, there will be an association between two species in which one organism lives on or with the other and benefits from the relationship but without harm or benefit to the host species. For two more Trivia points, what is that form of symbiosis?

3. Observant divers know that the underwater world is not "a silent world." Most diving areas are, in fact, quite noisy. Some of our noisiest neighbors being the little creatures called snapping shrimp. For six points mark one or more reasons why you think the snapping shrimp snaps.

- a. _____ To stun small marine life so they can be used for food.
b. _____ To attract the opposite sex of the species.
c. _____ To call attention to the shrimp's territory.
d. _____ To repulse animals too large to stun

4. In a previous Trivia Quiz, a question appeared regarding the "seven seas" and listed the five oceans with the Atlantic and Pacific divided into North and South. Of these the Pacific, Atlantic, and Indian oceans are the most commonly recognized. For three more points:

a. Which ocean has the largest area?

b. Which ocean has the deepest water?

c. Two of the three oceans have mid-oceanic ridges. Which ocean does not?

5. Let's go from the world of the diver to divers and diving. You will recognize the famous divers listed below. Match their names with the titles of books they have written. Some are old timers and you get two full points for each correct answer.

- | | |
|------------------------------|--------------------------------|
| a. Victor Berge (1930) | 1. Free Diving |
| b. Robert F. Marx (1973) | 2. The Undersea Adventure |
| c. Dimitri Rebrikoff (1950s) | 3. Pearl Diver |
| d. Philippe Diole (1953) | 4. The Lure of Sunken Treasure |

6. Mr. F. Romano was one of the truly great pioneer manufacturers of skin diving equipment in the early 1940s. If you bought equipment from him, you're really a mossback diver. For five points, what was the name of his company?

7. Mr. Romano deserves another pioneering credit. He financed the production of what I believe to be the first color underwater motion picture. The film was made in Cozumel in the 1940s.

- a. For two points, name the film. _____
b. For three points, what Olympic medalist swimmer starred in the film?

8. While on the subject of underwater films; for three points, who were the two noted divers who organized the first International Underwater Film Festival in the late 1940s?

_____ and _____

9. Anadromous fish, such as the salmon, spend most of their lives in the ocean and return to fresh water to spawn. There are some organisms, such as some eels, that spend their youth in fresh water and go to sea to spawn. For five points, what is the scientific name for those kinds of fish?

10. Enough of science. Diving rubber products gain durability through the use of additives that prolong the life of the equipment. For example, carbon black makes SCUBAPRO rubber goods stronger and tougher. Get this right for five points. What ingredients are added to give resistance to environmental conditions such as sunlight, heat and air?

11. Considered by many to be the "father" of the diving decompression tables in America, Capt. George Bond, U.S.N. is also credited with what development in modern diving? Five points.

12. This is for the old-timers. While on the subject of the history of decompression tables, it was found that "decompression procedures" were first used in France in 1854 to counter the symptoms of bends in caisson workers. For five more points to glory, the earliest "published" decompression tables used by the U.S. Navy about 1912 were called the C & R (for Bureau of Construction and Repair) Tables.

True ____ . False ____ .

13. The following names are well known in some diving circles. For 10 points, see if you can match the names of inventors with the diving equipment they invented. A clue. They all invented diving masks for commercial divers.

- | | |
|--------------------|---|
| a. Jack Brown | 1. Ohio Rubber Co. mask. |
| b. Victor Berge | 2. Advanced Diving Equipment and Mfg. Co. mask. |
| c. Bev Morgan | 3. Desco mask. |
| d. George Swindell | 4. The first "Band Mask." |



Sport diver wears a Desco mask in the mid 1940s. Air was supplied by a compressor on the surface.

14. This should be a freebie, but is so important to remember that you can earn five points for a correct answer. In ascending from a dive the rate of ascent is part of, perhaps the only, decompression and should always be 60 feet per minute, regardless of table used.

True ____ . False ____ .

15. Another five pointer. This is for your own safety. A few kinds of marine life may be dangerous to a diver. One of the most important safety rules concerning marine life is to be able to recognize dangerous species and to know why they are dangerous.

True ____ . False ____ .

16. SCUBAPRO snorkels are well made, simple pieces of essential diving equipment. Yet they do require a certain amount of care. Mark the appropriate maintenance procedures you should take in caring for your snorkel. Five points if you are right.

- Inspect the snorkel for obstructions.
- Wash thoroughly and dry after each use.
- Oil regularly to avoid cracking.
- Check condition of mouthpiece. Replace when it shows signs of wear or damage.

17. Recent diving history. Mel Fisher is famous for the tons of gold and silver he and his hard-working and persistent crew recovered off Florida. For five more points, who is the best-known diver who found and recovered some substantial treasures off Bermuda?

18. Besides the gold and silver both he and Mel Fisher found, some other valuables were in the form of jewels.

For five points, the most predominant gems found were:

- Diamonds
- Rubies
- Sapphires
- Emeralds

19. For four points, the largest body of water scientifically designated a "bay" is called,

20. For another four points, it is located in:

- North America
- Asia
- Europe
- Africa

You probably needed at least one of your dozens of books on diving to find the answers to all of these trivia questions. Remember, SCUBAPRO reserves the right to be wrong. For five points, in one question in the last issue of Trivia Quiz. How many caught the reference to an eel being an anadromous fish. They are not. If you think we are wrong about other items, let us know. Also, take the time and have the fun of sending in your own trivia questions. Answers are on page 78. If you scored:

0 to 25, your diving buddies can hook you.

26 to 50, you can still be led astray.

52 to 75, you can probably hook some other diver.

76 to 100, you probably read SCUBAPRO magazine regularly.

See you next issue.

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MILE HIGH

(Continued from page 29)

The best time of year to harvest crawfish is in the late summer when they gather in shallow water to mate. Spring is also good, as the females come into shallow water to release their eggs. In winter, most of the crawfish head for deeper water, although there are usually a few stragglers to be had in the rocks at less than 60 feet.

The place to get started diving in Tahoe is at Sand Harbor. This is a "get your feet wet" beach dive that provides a chance to adjust your buoyancy to fresh water, and get used to diving at the high altitude. Sand Harbor has a gently sloping bottom, within a protected cove. A lot of dive classes use this cove and they have left behind an old missile shell and a small barge for search and rescue practice. There is a good wall outside of the cove, and a lot of giant boulders divers will find interesting.

There are plenty of well-preserved wrecks, barges, steamboats, planes, and cars in the lake. The barge in Emerald Bay is a good shallow water dive, but you need a boat to reach it.

"This is one of the best wrecks I have ever been on," said photographer Adam Zetter. "Maybe it is the lack of current and surge that has saved the wreck, but it is still in one piece. And there is a lot of stuff all over it, like old plates that you can still read the labels on. There are old bottles scattered literally everywhere. And then a salmon swam right out of the wreck and practically into my face. It was a great dive."

There are other barges that divers have found in Tahoe, and probably another dozen will be found over the next few years. There is a Model T Ford in Emerald Bay. Outside of Emerald Bay, and about a quarter of a mile north, is a cove with waterfalls and a wall that few divers have ever been on.

There are also newly discovered Indian rock paintings, near Stateline, at the north end of the lake. There isn't any official information on the paintings yet, but the local divers believe the paintings could be 10,000 years old, since they had to be painted before the lake rose to its present level.

Before making a dive in Tahoe, there are safety factors that any diver should take into account. The first is the change in buoyancy from salt water to fresh water. Any advanced dive manual can supply conversion tables that will help you to estimate the correct amount of weight for diving in fresh water. Basically, freshwater diving requires less weight.

The next hurdle is more difficult to deal with, and that is altitude adjustment for yourself and your gear. To start with, most depth gauges are saltwater calibrated to sea level; they are not accurate at the high altitudes of the lake. A gauge that worked fine in San Diego, will read 30 feet when you are at 40 feet in Lake Tahoe unless it has a "zeroing ring" which can be used to adjust the gauge. Dive stores in Tahoe rent gauges that are correctly calibrated and adjusted for the area. They can also help you profile a dive around your own equipment, by adjusting for the erroneous readings.

Once your equipment is in order, the next step is to plan your dives. There are several high altitude adjustment tables on the market and in dive manuals. Melton uses the E.R. Cross Formula or the Practical High Altitude Tables. Melton is very conservative with any dive plan, always building in a good margin of safety by usually moving up two boxes on his table for safety, rather than the one box that is standard for a lot of sport divers. Ascent times must also be slower at high altitude. Melton trains his classes to ascend at 1 atmosphere per minute.

The final consideration is the max-

imum altitude you will be at within 12 hours of the dive.

Melton said, "The pass is over 8,000 feet, and a lot of people coming up from near sea level don't realize they are off-gassing from the time they get here. Just by coming to Tahoe, you are in a repetitive dive group. If you have arrived in Tahoe within the past 12 hours, or will leave within the next 12 hours, your diving must be planned to take into account the highest point of your journey. You must use the highest elevation you will be at within that time for the calculations."

"Most of our diving is from boats," said Melton. "A lot of the shoreline is privately owned, so you need a boat to get to the best spots." You can easily find boats to rent in Tahoe, or trailer your own. However, in bad weather the lake gets vicious, and there isn't an emergency service for rescues.

With a little caution, Tahoe can be a very fine and safe dive. There is a lot of history beneath the surface of the lake that still remains to be discovered, and divers will be the people who find it. This may be the one vacation spot where you can combine diving with a number of other activities such as rock climbing, hiking, skiing, gambling, or fishing.

There are plenty of hotels and campgrounds around Lake Tahoe. The hotels will be booked solid on Thanksgiving and the New Year, so make reservations before you go on big ski holidays. And even when the days are warm in summer, the nights can be below freezing, so bring warm camping gear no matter what time of year you visit. The only dive shop in Tahoe at this time, is the Diving Edge, 176 B Shady Lane, P.O. Box 2978, Stateline, NV 89449. Phone: (702) 588-5262.

Sierra Dive Co., 104 E. Grove St., Reno, NV 89502. Phone: (702) 825-2147 also serves the lake.

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BY CLARK ADDISON

Personal Dive Sonar CHARTS THE WAY

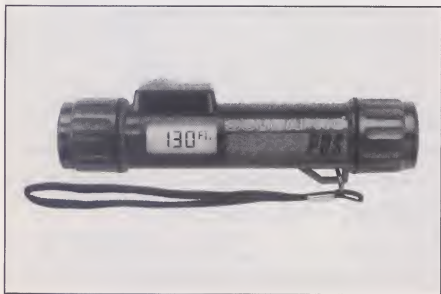
Have you ever considered becoming a human sonar? We used to play that role in the clear waters off Baja's Sea of Cortez. Aboard an inflatable boat running at trolling speed, one diver would hang over the side with his head in the water. Anytime he saw something through his mask that looked like a reef, he would wave an arm. We would stop the boat, throw out the anchor, and hope we were where we wanted to be. If visibility was 50 feet, and the reef was 60 feet deep, the technique left lots to be desired.

A digital readout on the SCUBAPRO Personal Dive Sonar indicates the distance to objects underwater.

Clark Addison is a free-lance writer and photographer living in California who frequently writes about new diving products.

Now that SCUBAPRO'S Personal Dive Sonar is here, human Fathometers are obsolete. As a matter of fact, several difficulties confronting divers are now passe. Consider the following scenarios:

- ☐ You are swimming on the surface in a new area looking for any kind of reef. Underwater sounds tell you there's one out there somewhere, but you don't want to waste the time and effort of making repeated dives, with the distinct possibility of finding nothing.
- ☐ You are swimming an underwater compass course over a sand bottom, looking for a reef or a wreck. With 25-foot visibility, everything in the distance fades into a blue-green mist. If only there were some way to make sure you were headed in the right direction before passing by the objective.
- ☐ You and your buddy have become separated underwater. Ascending a few feet, you look for his bubbles, but can't see anything. You would rather not have to go all the way to the surface to find him.
- ☐ Diving on a deep wreck, you are close to the limits of the tables, and know that some safety decompression is required. Therefore, you want to be sure to ascend on the anchor line. However, the more interesting parts of the wreck are some distance from the anchor. It would be good to have a foolproof way to locate the anchor line quickly when ascent time arrives.
- ☐ Swimming underwater, you come to the edge of a drop-off. Before descending, you would like to know how much farther it is to the bottom, to determine whether it fits into your dive plan.



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Tests have shown the PDS can detect a single kelp plant or anchor line from a distance up to 30 feet.

The solution for all these situations is an exciting new product from SCUBAPRO: the PDS (Personal Dive Sonar). No larger than a compact flashlight, PDS is a hand-held, digital instrument that goes underwater with you. More than just a depth sounder, it's an entirely new concept in diver instrumentation. It may be used vertically from the surface, or both vertically and horizontally underwater. Like an underwater crystal ball, it probes electronically into the murky distance to tell you if something is out there, and how far away it is. Moving objects will also be detected.

Measuring 8 inches long by 1 1/4 inches in diameter, the PDS looks and feels like a small underwater flashlight. When the power switch is activated, its transducer sends out pulses of high frequency sound. These pulses are reflected from the bottom or any solid object, back to the instrument. They are then transformed into electrical signals that are converted into a lighted, digital LCD display that shows the distance in feet to the nearest object. This display reads continuously as long as the power button is depressed, holds the final reading for 10 seconds, then shuts itself off to conserve battery power.

Made of AES plastic, both ends are sealed by gaskets as well as O-rings. Consequently the unit is water resistant to a depth of 200 feet. Its range of 2 feet to 260 feet will handle just about any sport diving situation. With a 24-degree beam angle, it is sensitive enough to read a strand of kelp, or even an anchor line, when aimed horizontally.

Power is supplied by a single 9-volt, alkaline battery. In factory tests, this has run the instrument for three days of continuous use. Since it is activated for only a few seconds at a time in actual service, a battery should normally last about a year. However, if the unit isn't used for a long period of time, the manufacturer recommends removing the battery to guard against possible leakage.

The battery compartment is opened by merely unscrewing the cover furthest away from the switch. Both ends look the same; the transducer cover is the one closest to the switch. Nothing in that end is user serviceable, so it should always be kept closed.

Traditional sonar devices are bulky, delicate instruments that shouldn't even get splashed let alone submerged. They are made to be mounted semi-permanently on a dry, hard-hulled boat. Even bringing one aboard a wet-riding inflatable is a recipe for disaster, unless the unit is advertised as waterproof.

The most unique feature that sets the PDS-1 apart from a depth sounder is its ability to go underwater. There, it can be used as a hand-held, sidescan sonar. It won't draw silhouettes of the bottom contour like the \$50,000 models, but when pointed horizontally it will read the distance to the nearest object. When swimming over a flat bottom, it will give a reading to that reef or wreck you are looking for, or a school of fish above it. Tests have shown it to be sensitive enough to pick up a single kelp plant, or an anchor chain, from a distance up to 30 feet. It can even locate your buddy if you become separated.

Because sensitivity cannot be adjusted like conventional sonar devices, the PDS has a few limitations. In a thick kelp forest, for example, it will read only the nearest plant. We tested it in heavy kelp off Point Loma in San Diego, and were unable to read past the surface blades. Conventional sonar devices also have problems in this sort of environment, but tuning down the sensitivity can often overcome them. Outside the kelp beds, however, the PDS gave us extremely accurate readings of the bottom reefs, within a foot or two of the actual depths indicated on our electronic console.

It was in the Sea of Cortez that the instrument really proved its worth. At San Jose del Cabo, we hired fishermen to take us to Gorda Banks in their pangas. They usually find the reefs by

dead reckoning, and in the past had sometimes dropped us into waters at the extreme edge of diving depth. With the Personal Dive Sonar, we were able to locate shallower reefs that allowed far more bottom time.

The El Bajo Seamount outside La Paz consists of three separate pinnacles. The shallowest one is 60 feet; the others 80 to 90 feet. With inexperienced divers aboard our charter boat, we needed to anchor on the shallow pinnacle. The PDS found it with no problems.

The unit works best in open water where there are few obstructions. Measurement of depth from the surface is the instrument's forte, and the user should be able to take accurate readings on the first attempt. Just make sure it is aimed perpendicular to the bottom, and that the transducer end is immersed in water. If the unit is held at an angle, false readings will result.

Sidescan measurement below the surface requires some practice. With experience, the diver will be able to discriminate true readings from interference. It is best to take multiple readings, scanning over a wide area, then continually recheck the readings as you approach the objective. If nothing is there, or if it's more than 260 feet away, three dashes show in the indicator window. This is helpful, because it tells you the PDS is working properly.

Underwater, the PDS is positively buoyant. A wrist lanyard is supplied, which also allows it to be clipped to the diver's weight belt or BC. It can also be easily stowed in a pocket. It comes in a Lexan storage tube, which will also protect it from dings and scratches while in a dive bag.

In the past, this type of instrument was available only to commercial and military divers. At a price of \$225, the Personal Dive Sonar is the most compact, and the most economical sonar device available in the sport diving field. Its many applications in the field are limited only by the diver's needs, experience, and imagination.

\$



TRAVEL TIPS

Getting There

BWIA offers what is normally very efficient, on-time daily service from Miami and New York. BWIA also flies directly from Europe to Barbados, bypassing the U.S., to make it the most accommodating European connection. Pan Am and American also fly here.

When To Go

The rainy season is between July and November, but that's also the warmest period and when hotel rates are lowest. Barbados is actually in the Atlantic, and the ocean can get quite rough during winter. Try to avoid the week following a full moon, when seas are often the most turbulent.

Where To Stay

Barbados has many excellent hotels and resorts, far more than most islands. Most are well away from the capital city of Bridgetown, which is fine if you don't like to do a lot of exploring on foot. I do like to walk, so I usually stay at the Grand Barbados on Carlisle Bay, which is not only close to the shallow wrecks but just a 20-minute walk from town.

The Hilton is also in this same area.

The Divi group has two hotels associated with the always-superb

Peter Hughes dive operation. They vary in formality and dress code, to appeal to different types of divers. Other dive operations include the Shades of Blue at the Coral Reef Hotel; Jolly Roger Water Sports, which is not hotel affiliated; Willie's Water Sports at Freshwater Bay and the Heywood Resort; Dive Boat Safari at the Hilton Hotel and the Southern Palms; and Blue Reef Ltd. at Glitter Bay.

Typically, visitors to Barbados are more interested in the resort and its amenities and make their choice on that basis.

Currency

The Bajan dollar is the quoted currency. One U.S. dollar equals \$1.98 Bajan, about a two-for-one ratio. This is an easy rate to work with. U.S. currency is accepted everywhere, which makes it unnecessary to exchange money.

Electricity

110 volts AC 50 cycles, despite the strong British heritage.

More Information

Barbados Board of Tourism, 800 Second Ave., New York, NY 10017; toll free (800) 221-9831 and in New York (212) 986-6516. **\$**

BARBADOS

(Continued from page 25)

plore the island thoroughly. Rental cars are available to traverse the island's 800 miles of paved roads, but the most efficient way is to share a taxi with several other people and let the driver worry about how to find everything. Rental cars are \$200-\$250 per week while an afternoon's tour will run \$60 or more. If you opt for a taxi tour, I'd highly recommend Emerson Clarke to the Barbados Transport Co-operative Society Ltd., who does a superb job.

The St. Nicholas Abbey Plantation, built before 1660, was a working sugar plantation until just a few decades ago. The house, one of the two oldest in the English-speaking Western Hemisphere, is open weekdays for tours.

The Sunbury Plantation House, over 300 years old, is furnished with many antiques to provide a detailed, accurate picture of what early plantation life was like. Sunbury not only has an open-air patio restaurant, but serves dinner in its formal dining room every Wednesday.

Sam Lord's Castle, restored and now a Marriott hotel, was the home of a notorious pirate/wrecker who placed lanterns on palm trees at night to lure ships onto the reefs so he could pillage their cargo.

Christ Church was the scene of one of the world's most bizarre and famous instances of psychic phenomena. In 1820, coffins of the Chase family inexplicably kept moving inside their vault after it was sealed. The movements were so tumultuous that the coffins were sometimes damaged. After failing to solve the riddle, the governor finally had the family members buried separately. This seems to have ended the problem, since the Chase family has slept peacefully ever after—so far.

Codrington College, the home of the governor of the Leeward Islands in the 1600s, has since been transformed into a seminary. Besides being historically interesting, it is a fine place to watch a lively cricket match on Sunday afternoons. Or, if horse racing appeals to you, you can view a race every other Saturday at the Garrison Savannah near Bridgetown. But don't come in shorts and thongs. Dress is "smartly casual," as it is in most places on Barbados.

Bajan cooking is world famous, and you could happily spend every evening exploring a new restaurant. Flying fish are the Bajan equivalent of our hamburger, and are served as main courses or in sandwiches. Check the special newspapers published just for tourists available at most hotels. These papers contain ads for enough different restaurants that you're certain to find a half dozen to suit your taste. **\$**

SHELLS

(Continued from page 10)

despite migrations of thousands of kilometers, many return to their natal island at two to four year intervals. The difficulty of tagging and recovering turtles during the migratory phase has left many gaps in our knowledge.

Even though large turtles have few natural enemies, not all of them make it back. Their primary natural predators are sharks. Occasionally one is found that has lost a flipper, and turtle remains are commonly found in the stomachs of sharks.

A more serious predator is man. Turtles are easy prey, especially when nesting, and wholesale slaughters have occurred at those times. They are often caught in nets and fish traps. In Malaysia, turtle hunting has been forbidden since 1964. However, enforcement is spotty owing to the vast area, lack of personnel, and threats of piracy. Although Muslims are forbidden to eat turtle meat, Chinese Malaysians and some of the indigenous peoples consider it a delicacy. Native rights to egg collection continue in areas like Sipadan, where past generations had made their living this way.

Turtles recognize no political boundaries during their journeys at sea. In the nearby Philippine Islands, they are hunted both in open water and while nesting. Dynamite fishing has destroyed habitat, as well as resulted in incidental kills. Many others are killed by trawl nets in oceans throughout the world.

Three nesting islands off the coast of Borneo have been declared a national park. But not even these are safe havens. Fishing fleets anchor off the islands to clean and pack fish for market. Turtles are frightened away from the beaches by the bright lights, or are killed by sharks and other predators which have been attracted to the area by edible refuse from the boats.

Generally, the outlook for turtles around the world is grim. Many species are on the endangered list. Many countries, including the United States, now prohibit importation of any turtle products.

Even in Malaysia, historical reports show that their population has decreased significantly from the level before World War II. The intense turtle activity on Sipadan is almost like a step backward to a happier time. This island could be one of the last refuges for these endangered animals.

For more information regarding travel to Sipadan Island, see the Spring 1989 issue of *Diving & Snorkeling*, or contact Creative Adventure Club (800) 544-5088 or from California telephones, (800) 553-9233.

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COSTA RICA

BY WALT STEARNS

Perched 30 feet down on the jagged slope of a rock outcropping called Sailfish Rock, we watched large schools of jacks, rainbow runners, and blue runners swirl about the two of us. Sisinio Alvarado, who is one of Costa Rica's resident divemasters, motioned in the direction where two large, gray shapes were moving in the hazy distance. After looking for a few moments, I realized we were not alone, but being observed with equal curiosity. In a matter of seconds we were in the company of not two, but four very large bull sharks. Bull sharks (*Carcharhinus leucas*), are definitely in the top-10 list of best known bad actors, and they are not to be taken lightly.

Soon after Sisinio and I had overcome

Walt Stearns, a Florida-based free-lance writer and photographer, began snorkeling at age three. He was a diver for Miami Seaquarium and is currently a PADI assistant instructor.



Pacific Sailfish and large schools of grunts can be seen in Costa Rican waters.



the initial rush of adrenalin, we noticed our company was as leary of us as we were of them, maintaining a distance of 25 to 30 feet from our location. After a closer inspection, they quickly faded back to become mere shadows in the blue-green void, hanging right outside the limit of our visual range. We could not see them, but we knew they were still there.

Just then, I remembered a conversation I had with Rick Wallace, the manager of the resort El Ocotal, only the previous day. When I inquired about the diving around Sailfish Rock, he gave me an intriguing, but also comical answer. Rick mentioned a time about two years ago when he and head divemaster Mario Vargas were beginning to make the transition toward offering diving services at El Ocotal, then primarily a fishing resort. They sought the help of some local commercial lobster divers for scouting the best possible dive sites. When the name Sailfish Rock came up, the divers responded with "Oh no, we don't dive there."

I was first attracted to the idea of diving the Pacific coast of Costa Rica during a sailfishing trip I had made to the Bat Islands back in 1977. To say the least, that trip was anything but uneventful. During the course of one week of fishing around such notable

coastal region was for the most part unexplored. It was not until the installation of several fishing camps 11 years ago that the true fishing—not to mention the potential diving—was finally beginning to emerge. Only recently, due to the growing attention that Costa Rica has gained from divers, is Costa Rica beginning to achieve prime destination stature for those adventuresome divers seeking the larger forms of marine animals found here. My two trips to the Bat Islands and the Catalinas in the Gulf of Papagayo (in April and June of 1989) were exceptional. I saw an unusually large quantity of fish life seldom seen in other parts of the world. Strangely enough, just about every species of fish I encountered, including some varieties that do not normally school, were congregated in large numbers. Even butterfly and angelfish were moving in schools.

Located on the northern fringe of the Gulf of Papagayo, the Bat Islands' steep basaltic rock formations protrude high above the surface, providing a solemn testament of what waits below. Diving around the Bat Islands gave me a feeling somewhat like the one you experience while exploring the tips of underwater mountains. It is truly a unique and exciting feeling, especially being surrounded by so many giant schools of

Off the Pacific Coast of this peaceful Central American country, divers will find large pelagics among huge schools of fish.

Underwater Frontier

sites as Sailfish and Amberjack rocks, just about every lure and bait rig I used was eaten alive by large dolphin, wahoo, rooster fish, large groupers, snappers, and sailfish, including one 128-pound sail that I had taken on 15-pound test. The fishing trip left me with a burning curiosity (in terms of diving) about what one might see below the surface. At that time, however, there were no diving operations of any kind to be found in Costa Rica.

Encompassing the entire area of the Golfo De Papagayo (Gulf of the Rooster) is the Guanacaste region, Costa Rica's most northwestern coast facing the Pacific Ocean. It contains 75 miles of some of the most wild and almost inaccessible coastline to be found. Less than 12 years ago, before the region was first recognized as a potential premier destination for world-class, blue-water sportfishing (particularly for large marlin and record-sized sailfish), the

fish. Such sites as Sailfish Rock, Amberjack Rock, and Black Rock (the last two are submerged pinnacles with only their tips breaking the surface) normally yield huge schools of horse-eye and crevale jacks, rainbow runners, and small tuna—not to mention a healthy population of big broomtail groupers, cubera snappers (Pacific dogtooth snapper), and amberjacks, from 40 to 80 pounds.

Similar to the Bat Islands to the north, the Catalinas (at the south end of the gulf) are spread out over a much larger area. Harboring several partially and fully submerged pinnacles of their own, the quantity of fish life in the Catalinas (in terms of larger fish) is not quite as prolific as those found in the Bats. However, there are still opportunities to see a large manta ray or a school of the much smaller golden ray, as well as schools of jacks, blue runners, and grunts typically aggregating around these submerged rocky summits. In ad-

(Please turn to page 76)



The pool at El Ocotal resort.

CALL ME

(Continued from page 26)

practice maintaining your distance from them at all times. Whether I'm "submerged" in the work of assembling my gear before a dive, actually submerged under the water, or immersed in the excitement after a dive, I try to Observe, Assess, and Practice each of the tips below to minimize my workload.

As divers we know aerobic conditioning will keep our heart and lungs functioning efficiently. Many books and articles have been written about conditioning techniques, and anyone not

familiar with aerobics should do a little preliminary studying. Whatever the type of exercise chosen, your goal should be low-level, continuous conditioning for endurance. Swimming, stationary bike riding or walking are good choices. If you have medical problems, be sure to check out any proposed program with the physician who knows you best before beginning. The better your physical condition, the less tired you will be during all phases of the dive. A tired diver uses more air.

Air Supply VS. Air Utilization

Air supply and air utilization are very different problems. On one hand, you may see your air supply (volume or pounds on your gauge) drop because of the physics involved. On the other hand, you may see your air utilization (breaths per minute) increase because of extenuating circumstances.

Air tanks are immersed in cool water while they are being filled to draw off the heat of compression and allow more air to enter the tank. The tanks are then stored in the sun on the dive boat deck. They heat up and the pressure goes up, sometimes by as much as 200 to 300 pounds more than is actually available. As soon as the tank is immersed at the start of a dive, it cools down, and the pressure drops and the volume decreases. This is a fact of physics that you can't control; it's not your fault.

The behavior of your dive buddies is one factor that can effect your air utilization. To manage your air supply wisely everyone must agree on a number of points including how much you will swim versus drift; how you will lead on each dive; and, the maximum permissible space between divers.

Agreeing on points like these will improve air utilization by reducing unnecessary and irritating chases by one diver after another.

Checking Your Gear

The time to check your gear is on land, preferably the night before a dive. Enroute to the dive site is the wrong time to start wrestling with repairs or rigging. The energy expended fooling with your gear on a bouncing dive boat can raise your anxiety level and your metabolic rate and may lead to increased air utilization when you begin diving. Board the boat with your gear in order and relax and enjoy the ride while discussing your dive plan on the way to the site.

If the boat is loaded with divers, entry off the rear dive platform may require a sizable energy expenditure. You may have to gear up near the bow and slowly make your way to the stern to get in the water. Of course, you won't be using air from your tanks, but you will

be working too hard and once in the water, you will be using more tank air than normal to recover from that work.

Ask the boat captain if he permits a back roll water entry off the side of the boat. If it is permitted, gear up in the bow and do a back roll into the water. Not only will you avoid the congestion at the stern, you will expend little energy on entry.

If you must enter off the stern, go back and let the crew help you with your gear while you sit on the rear exit platform. In either case, limit exertion while on the boat as much as you can.

Also listen to the divemaster's instructions about the site. His description and dive plan will provide hints on how to dive the site most efficiently.

Observe the people in the dive group. Identify the veteran divers, the klutz (there is one in every group), the nervous novice, the student divers, and those who may be in an instructor's certification class. Take cues from the veterans. They may know the area and comment on the current, the reef and how to see it best. Avoid the klutzes, the students, the nervous novices and the instructors who are only there to get certified. They can all drain your energies rapidly if you get tangled up in their activities.

Identifying the types of divers in the group will tell you who to avoid and what water entry techniques to use. If you are with veterans, a rear platform entry will probably be smooth and effortless. If you are surrounded by novices, get permission (if necessary), and remain forward of all dive platform activity. Gear up and back roll in to avoid the crowd.

Conserve energy by refusing to sit around with all your gear on waiting for the slow pokes. Whether beginner or advanced, some people have a knack for fooling around. Don't let them interfere with your energy conservation plans. Either wait to gear up or, if you are ready, get in the water.

Entering the Water

When you do enter the water remember: get in, get away and get down. Secure your mask and regulator with both hands as you enter the water. Nothing uses up more air and energy than losing a mask or dropping your regulator upon entry. Especially irritating is a free-flowing regulator that blows off hundreds of pounds of air before you can get it stopped. The dive has been shortened before it even starts. Once in the water, quickly get away from the boat and the other divers to avoid the risk of getting hit by another diver. Get below the surface as soon as you have given the "OK" sign. Surface bobbing burns up air fast.

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During the Dive

It should be clear by now that air management problems can begin long before the first breath is drawn off a tank. Once below the surface is where you take control of the true work of diving. First get away from the boat and then get down to about 10 feet and hang there for 60 seconds or so. Check your gear for malfunctions, gather your thoughts, assume a comfortable breathing pattern, and remind yourself that air supply management does not mean breath-holding—ever.

The 60-second hang is the beginning of in-water control. It's where you start concentrating on the points that come next. Think of S-O-A-P: Submerge (finally), Observe (gear, divers, divemaster), Assess (visibility, current, depth), Practice (go for it).

Deflate your BC and, as you breathe slowly and evenly, drop or swim effortlessly toward the bottom. As you descend, either cross your arms across your chest or lock your fingers in a rock-the-baby arm position. The goal is not to use your arms for anything. Restrict your arm motion and you reduce air utilization. If you are used to flailing your arms, restricting them will take practice, but it works. Watch the divemaster and old pros. They rarely use their arms.

As you near the bottom, concentrate on adjusting your BC for neutral buoyancy just once. Take 10 or 15 seconds to get it right by putting amounts of air in your BC until you are neutrally buoyant, then leave the octopus alone. Avoid wasting your air by constantly inflating and deflating your BC to rise or sink. If you are truly neutrally buoyant and can exhibit some patience, you can rise by inhaling a long, slow breath and letting your lung volume carry you up. You can sink by exhaling and dropping slowly without messing with your BC and using up precious air unnecessarily. Once on the bottom and neutral, your air gauge should reflect only tank pressure drop due to cooling and minimal amounts used during the descent.

As the dive group moves off, take a middle of the road position. Don't trail behind and don't lead the pack, that's what the divemaster is getting paid for. Stay in the center of the group, remember the dive plan and anticipate the direction the group will take next. Remember, you are trying to conserve your air and still see as much as you can. If the group seems to be headed from first base, to second, to third but you don't see anything of interest at second base, cut across the diamond and meet them at third. After all, if you are enjoying the dive, you really don't have to visit every nook and cranny.

Keep your arms as motionless as possible and kick smoothly.

Barren Reef Law

Avoid being at the beck and call of everyone, especially well-meaning dive buddies. The Barren Reef law applies when a diver gestures to you to "Come see!" something. The law states that the more air you waste being lured to a distant attraction, the less likely there will be anything to see upon arrival.

A dive is only what you make it, and you can make it anything you want. A standard two-tank dive is a good example. The divemaster announces that the first dive will be to 80 feet. You know how fast you burn air and the laws of physics say you will burn it faster at greater depth, but you want to stay down as long as possible. So take charge. Submerge to 60 feet, not 80, establish neutral buoyancy, and cruise 20 feet above the bottom. Drop to 80 feet only if the wreck or reef has something really astounding to show you. By taking control in this way, you are managing your dive experience for greater pleasure and avoiding the embarrassment and frustration of an early ascent.

Reentry following the first of two dives can be strenuous. If you work too hard, you can tire quickly and, on the second dive, you may use air faster because of early fatigue.

One way to keep your reentry work level down is to observe the divers ahead of you as you exit the water. Don't go to the surface until you can see the ladder is clear. Hanging on the decompression bar is much less work than bobbing around on the surface. Pace your ascent, get in line for your exit, hover below the surface and think of S-O-A-P: stay submerged and calm, observe the novices and the pros, assess the situation, and practice a good exit. When the ladder clears, go for the surface, remove your gear and get out.

You can lessen the work of climbing into the boat and removing your gear by knowing what the crew will expect of you. Strange as it may seem, boat crews do exhibit differences in attitudes toward exiting after a dive. Crews have preferences regarding the removal sequences of weight belt, tank, BC, fins, mask, and snorkel. Do it their way. You will cut down on the time it takes them to help you get out and reduce the energy you expend.

Between Dives

If you tend to get nauseated on days when the sea is up, don't sit on the boat between dives. The pitch, roll, and yaw combination may make you ill in spite of using a Transderm Scope patch behind the ear or an anti-nausea

medication. Tell the boat captain or divemaster about your nausea problem and get his/her permission to stay in the water, hanging on the decompression bar, between dives (unless, of course, the boat is changing locations!). The most unusual response you will get to this request is wonderment from other nauseated divers who didn't think of it a long time ago.

Monitor your air and the time carefully, and pop up just before the next dive. Let the dive crew work to change your tank and head back to the bottom knowing you have averted the queasy feeling and hypermetabolic (high air-utilization state) nausea can precipitate.

After the Dive

The day is over, you have added two more dives to your log and it's time to think about S-O-A-P one more time. Review the effort you put out before and during the dive and plan to practice energy reduction tricks in areas where you feel you worked too hard. After all, the real trick is to have plenty of energy left at day's end so you can sit around at dinner and tell tall tales about the astounding underwater sights to make the non-divers at the next table ask how they, too, can become SCUBA "pros" like you guys.

\$

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Illustration by Nick Fain



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Marco Island 33937
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Daily: 9 to 6

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Monday-Friday: 9:30 to 6:30
Saturday: 7 to 6
Sunday: 7 to 4

Aquatic Center

2126 S.W. 34th St.
Gainesville 32608
(904) 377-DIVE
Monday-Friday: 10 to 7
Saturday: 10 to 5
Closed Sunday

Blue Horizons

703 S.R. 584 W. #120
Ocala 34677
(813) 854-2298
Monday-Friday: 9 to 8
Saturday: 8 to 8
Sunday: 8 to 2

Buddy's Dive Shop

Mile Marker 85 on I-1, P.O. Box 409
Islamorada 33036
1-800-367-4707 In Florida
1-800-223-4707 Others
Daily: 8 to 6

Divers Dream East

2871 S.W. 27th Ave.
Miami 33133
(305) 856-0565
Monday-Saturday: 10 to 7
Closed Sunday

Divers Dream North

839 W. 48th St.
Hialeah, 33012
(305) 362-1201
Monday-Saturday: 10 to 7
Closed Sunday

Divers Dream

DBA Aquanauts South
1290 5th St.
Miami Beach 33139
(305) 354-7710
Monday-Saturday: 9 to 8
Sunday: Saturday: 7 to 6

Dive Shop II

Sea Mist Marina
700 Casa Loma Hwy.
Boynton Beach 33435
(305) 734-5566
Monday-Friday: 9 to 7
Saturday & Sunday: 8 to 5

The Diving Locker

223 Sunny Isle Blvd.
North Miami Beach 33160
(305) 947-6025
Monday-Saturday: 9 to 9:30
Sunday: 9 to 6

Good Time Divers and Sports

6322 Highway 98 West
Bellevue 33620
(804) 245-5711
Daily: 9 to 6

Gulf Coast Pro Dive

6702 Highway 98 West
Pensacola 32506
(904) 456-8845
Monday-Thursday: 9 to 7
Friday & Saturday: 6 to 7
Sunday: 7 to 12

Half's Dive Shop

1994 Overseas Hwy.
Marathon 33050
(305) 743-5929
Daily: 9 to 6

Key West Pro Dive Shop, Inc.

1605 N. Roosevelt Blvd.
Key West 33040
(305) 296-3823
Monday-Saturday: 9 to 6
Sunday: 9 to 6

Ocean Pro Dive Shop Inc.

2250 Bee Ridge Rd.
Sarasota 33579
(813) 924-3483
Monday-Thursday: 10 to 6
Friday: 10 to 9
Saturday: 9 to 6

Panama City Dive Center

4823 Thomas Dr.
Panama City 32408
(904) 235-3390
Daily: 9 to 6

Scuba Strip

348 Miracle Strip Parkway #19
Fort Walton Beach 32548
(404) 243-1600 and 243-3373
Sunday-Friday: 9 to 5
Saturday: 8 to 6

Scuba-Ski Inc.

118 9th St., South
Naples 33940
(813) 262-7389
Monday-Saturday: 10 to 6

Sea Center Dive Shop

M.M. 29 1/2 Rt. U.S. 1
Big Pine Key 33043
(305) 872-2319
Daily: 8 to 6

Skipper's Snorkeling & Scuba

408 E. Wright St.
Pensacola 32501
Summer: Daily 9 to 6
Winter: Monday-Saturday: 9 to 6

Vortex Springs

Route 2, Box 18A
Ponce de Leon 32455
(904) 836-4979
Monday-Thursday: 7:30 to 6
Friday-Sunday: 7 to 7

GEORGIA

Charbon's Specialty Sports

850 Hawthorne Ave.
Athens 30606
(404) 548-7225
Saturday & Wednesday: 9:30 to 6
Thursday & Friday: 9:30 to 8

Dive, Dive, Dive...

Gwinnett Mall Corners Shopping Ctr.
2131 Pleasant Hill Rd.
Duluth 30136
(404) 476-7833
Monday-Saturday: 10 to 7
Closed Sunday

Diving Locker/Ski Chalet

74 W. Montgomery Cross Rd.
Savannah 31406
(912) 927-6603 or 6604
Monday-Friday: 10 to 6
Saturday: 10 to 5

Garris Dive Educators, Ltd.

2555 Dell Rd.
Marietta 30067
(404) 584-0382
Monday-Saturday: 10 to 9
Golden Isles Dive and Ski

2007 Cypress Mill Rd.
Brunswick 31520
(912) 264-1411
Monday-Friday: 10 to 6
Saturday: 10 to 5

Island Dive Center

1610 1/2 Frederica Rd.
St. Simons Island 31522
(912) 638-8590
Monday-Saturday: 10 to 6

Planet Ocean Scuba Center

Windsor Village Shopping Center
Columbus 31909
(404) 563-8675
Monday-Friday: 10 to 6:30
Saturday: 10 to 5

The Dive Shop

2401 B-1 Dawson Rd.
Albany 31707
(912) 436-3033
Monday-Saturday: 8 to 6
Closed Sunday

HAWAII

Central Pacific Divers

181 Lahainaluna Rd., Suite 1
Lahaina, Maui 96761
(808) 661-4661
Daily: 7 to 9

Fair Wind, Inc.

78-7128 Kaleopapa Rd.
Kailua-Kona 96740
(808) 322-2788
Daily: 7:30 to 5

Kohala Divers, Ltd.

P.O. Box 4335
Kawaihae 96743
(808) 882-7774
Daily: 8 to 5

Kona Coast Skin Diver Ltd.

75-5614 Palani Rd.
Kailua Kona 96740
(808) 329-8802
Daily including holidays: 7 to 6

Lahaina Divers

162 Lahainaluna Rd.
Lahaina, Maui 96761
(808) 661-4505
Daily: 8 to 5

Maui Dive Shop

Azeka Place Shopping Center
Kihei 96753
(808) 879-3388
Daily: 8 to 9

Ocean Activities Center

3750 Wailea Alanui, D2
Wailea, Maui 96753
(808) 879-4485
Daily: 9 to 6

Ocean Adventures

408 Kam Hwy.
Pearl City, Oahu 96782
(808) 487-9060
Monday-Saturday: 8 to 6
Sunday: 8 to 4
Closed Wednesday

Rainbow Divers

1652 Wilkina Dr.
Wahiawa, Oahu 96786
(808) 622-4532
Monday-Friday: 8 to 6
Sat. & Sun.: 8 to 6

Sea Sage

4-1378 Kuhio Hwy.
Kapa, Kauai 96746
(808) 822-3641
Daily including holidays: 8:30 to 5

IDAHO

Pocatello Diving School

1332 S. Third
Pocatello 83201
(208) 232-5906, after 1 p.m.
Monday-Saturday: 1 to 6

The Scuba Diving Co.

3707 Overland Road
Boise 83705
(208) 343-4470
Daily: 9:30 to 6:30

ILLINOIS

Anchor International, Inc.

315 W. Ogden Ave.
Westmont 60559
(312) 971-1060
Monday-Friday: 12 to 9
Saturday: 10 to 5, Sunday: 10 to 3

Anchor International

1790 Algonquin Rd.
Arlington Heights 60005
(312) 253-1960
Mon., Tues., Thurs., Fri.: 5 to 9

Do Dive In

2011 N. University
Peoria 61615
(309) 692-7600
Monday, Wednesday, Friday: 5:30 to 9
Tuesday, Thursday: 10 to 1
Saturday: 9 to 5

Scuba Diving Schools of America, Inc.

923 North Lake St., Rt. 31
Aurora 60606
(312) 696-1113
Monday-Friday: 10 to 8
Tuesday & Thursday: 10 to 9
Saturday: 10 to 4

The Scuba Shop Inc.

436 Roosevelt Rd.
Glen Ellyn 60137
(312) 858-4485

IOWA

Iowa State Skin Diving

Schools, Inc.
West University Plaza
1500 W. University Ave., Suite C
Des Moines 50311
(515) 255-8999
Monday-Friday: 10 to 7
Saturday: 10 to 6

INDIANA

Divers Supply Company, Inc.

3301 N. Illinois St.
Indianapolis 46208
(317) 923-5335
Mon., Wed. & Fri.: 9 to 7:30
Tues. & Thurs.: 9 to 5:30
Saturday: 9 to 5

Divers World

1271 E. Morgan Ave.
Evansville 47711
(812) 423-2738
Monday-Friday: 10 to 6
Saturday: 8 to 5

DNP Diving, Inc.

604 E. Main
Logansport 46847
(317) 735-3483
Monday-Friday: 8 to 4

Pro Dive Shop

3203 Covington Rd.
Fl. Wayne 46804
(219) 432-7745
Mon., Tues., Thurs. & Fri.: 12 to 6
Saturday: 9 to 1

KANSAS

The Dive Shop
7300 W. Frontage Rd.
Merriam 66204
(913) 677-9483
Daily: 10 to 7

KENTUCKY

Laurel Diving Headquarters

414 Master St.
Cobin 40701
(606) 503-1360
Hours: 9 to 6

Lexington Dive

2680 Wilshire Drive
Lexington 40503
(606) 277-5799
Monday-Friday: 10 to 7
Saturday: 10 to 5

Louisville Dive Shop

2478 Bardstown Rd.
Louisville 40205
(502) 458-8427
Monday-Friday: 11 to 7
Saturday: 11 to 5

Nemo's Dive Shop

Ows Nest Rd.
Hyden 41749
(606) 672-3152
Monday-Friday: 12 to 7
Saturday: 9 to 6

LOUISIANA

Divers Destination of Louisiana

196 Mt. Vernon Dr.
Lafayette 70503
(318) 984-4578
Monday-Saturday: 10 to 8

Houma Watersports

3219 W. Main
Houma 70360
(504) 879-2900
Monday-Friday: 10 to 6
Saturday: 10 to 3

Sea Horse Diving Academy

8726 Chef Menteur Highway
New Orleans 70127
(504) 246-5523
Monday-Friday: 11 to 7
Saturday: 10 to 8

Seven Seas

7885 Jefferson Highway
Baton Rouge 70809
(504) 928-1819
Monday-Saturday: 9:30 to 5:30

The Water Habitat, Inc.

1602 Jackson St.
Alexandria 71301-0442
(318) 443-5075
Mon., Wed., & Fri.: 10 to 6
Saturday: 10 to 5

The Water Habitat, Inc.

317 Frost St.
Laesville 71446
(318) 238-0709
Monday-Friday: 10 to 6
Saturday: 6 to 4

MAINE

Aqua Diving Academy

1153 Congress St.
Portland 04102
(207) 772-4200
Monday-Friday: 10 to 8
Saturday: 10 to 5

Skin Diver's Paradise

RFD #3, Turner Rd., Box 617
Auburn 04210
(207) 782-7799
Monday-Friday: 2 to 9
Saturday: 7 to 6

MARYLAND

Bethany Water Sports

3202 Corporate Ct., Suite G
Ellicott City 21043
(301)481-DIVE
Monday-Friday: 12 to 7
Saturday: 11 to 5

Divers Den Inc.

8105 Harford Rd.
Baltimore 21234
(301) 868-6868
Mon., Tues., Thurs. & Fri.: 9:30 to 9
Wed. & Sat.: 9:30 to 5

The Scuba Hut, Inc.

139 Delaware Ave.
Glen Burnie 21061
(301) 761-4520
Mon., Wed. & Fri.: 10 to 8
Tuesday & Saturday: 10 to 6

Tide Water Aquatics

1315 Forast Dr.
Annapolis 21403
(301) 268-1992
Monday-Friday: 12 to 7
Saturday: 11 to 5

MASSACHUSETTS

Aquarius Diving Center Inc.

3239 Cranberry Hwy.
Buzards Bay 02532
(617) 759-DIVE
Monday-Friday: 10 to 7
Saturday: 8 to 4

Merrimack Aquatic Center

171 Merrimack St. Route 110
Methuen 01844
(603) 688-6566
Monday-Friday: 11 to 7
Saturday: 12 to 4

Ultramarine Divers

94 Commonwealth Ave.
Concord 01742
(508) 369-1154
Daily: 10 to 8

United Divers, Inc.

59 Washington St.
Somerville 02143
(617) 666-0410
Monday-Friday: 10 to 8
Saturday: 9 to 6

Whaling City Diving Center

#48 Popes Island Road, Rt. 6
New Bedford 02740
(617) 992-2662
Monday-Friday: 10 to 8
Saturday: 9 to 6

SUMMER

Monday-Sunday: 9 to 4

MICHIGAN

Divers Incorporated

3380 Washtenaw Ave.
Ann Arbor 48104
(313) 971-7771
Monday-Friday: 10 to 8
Saturday: 10 to 5

Closed Tuesday & Sunday

The Dive Shop

6 4020 Corunna Rd.
Flint 48532
(313) 732-3900
Monday-Saturday: 9 to 6

Late Appointments Available

The Dive Site

9125 Portage Rd., Suite A
Kalamazoo 49002
(616) 323-3700
Monday-Friday: 10 to 7
Saturday: 1 to 5

Recreational Diving Systems

4424 N. Woodward
Royal Oak 48072
(313) 549-0303
Monday-Friday: 10 to 7
Saturday: 10 to 5

Scuba North, Inc.

13380 W. Bayshore Dr.
Traverse City 49684
(616) 947-2520
Monday-Thursday: 9 to 6
Friday-Saturday: 9 to 7

Sunday: 10 to 5

(Winter) Mon-Sat.: 10 to 6

The Scuba Shack

9982 W. Higgins Lake Dr.
Higgins Lake 48627
(617) 821-6477
(Summer) Monday-Friday: 9 to 5
Saturday & Sunday: 8 to 8

Seaquatics, Inc.

979 S. Saginaw Rd.
Midland 48640
(617) 835-8391
Monday-Friday: 10 to 6
Saturday: 10 to 5

Skamit Shop

5055 Plainfield N.E.
Grand Rapids 49505
(616) 364-8418
Monday, Wednesday, Friday: 10 to 9
Tuesday, Thursday, Saturday: 10 to 8

Tom & Jerry's Skin

& Scuba Shop

20318 Van Born Ave.
Dearborn Heights 48125
(313) 278-1124
Monday-Friday: 11 to 7
Saturday: 11 to 5

ZZ Under Water World, Inc.

1806 E. Michigan Ave.
Lansing 48912
(517) 485-3894
Monday-Friday: 10 to 7
Saturday: 10 to 5

MINNESOTA

Central Minnesota Divers

102 E. St. Germain
St. Cloud 56301
(612) 252-5752
Monday-Friday: 10 to 7
Saturday: 9 to 5

Club Scuba East

3035 White Bear Ave.
Maplewood 55109
(612) 770-5555
Monday-Friday: 10 to 8
Saturday: 10 to 5

(Summer) Sunday: 9 to 1

Club Scuba West

1300 E. Wayzata Blvd.
Wayzata 55391
(612) 473-4266
Monday-Friday: 10 to 8
Saturday: 10 to 5

(Summer) Sunday: 9 to 1

Fantasea Scuba

3429 East Highway 13
Burnsville 55337
(612) 890-DIVE (890-3483)
Monday-Friday: 10 to 8
Saturday & Sunday: 10 to 6

MISSISSIPPI

Out and Under

1200 Roebuck Dr.
Meridian 39301
(601) 693-5827
Monday-Saturday: 10 to 6

MISSOURI

Academy of Scuba Training, Inc.

437 Broadway
Cape Girardeau 63701
(314) 335-0756
Monday-Friday: 9 to 8
Saturday: 9 to 5

Aquasports, Inc.

5601 S. Campbell
Springfield 65807
(417) 883-5151
Monday-Friday: 9 to 7
Saturday: 9 to 5

Closed Sunday

Divers Village

PO Box 3228, Lake Rd. West 20
Lake Ozark 65049
(314) 365-1222
Daily: 9 to 5

Table Rock State Park Marina

S.R. 1, Box 911
Branson 65618
(417) 334-3069
Daily: sunrise to sunset
Nov. through Feb. open by appt.

The Dive Shop North

8135 North Oak
Kansas City 64118
(816) 436-5448
Monday-Friday: 10 to 7
Saturday: 10 to 5

NEBRASKA

Big Mac Scuba & Sail

4711 Huntington St., Suite #1
Lincoln 68503
(402) 466-8404
Wednesday-Saturday: 10 to 5
Sunday: 11 to 5

Diverstar

2322 North 72nd St.
Omaha 68134
(402) 391-1155
Monday-Thursday: 12 to 7
Fri., Sat., Sun.: 12 to 5

Mid Coast Divers Supply

8831 Maple Street
Omaha 68134
(402) 391-1554
Monday-Saturday: 10:30 to 6

NEVADA

Desert Divers Supply

5720 E. Charleston Blvd.
Las Vegas 89122
(702) 438-1000
Monday-Friday: 9 to 8
Saturday & Sunday: 8 to 6

Sierra Dive Co.

104 E. Grove St.
Reno 89502
(702) 825-2147
Mon., Tues., Thurs. & Fri.: 9 to 6
Wednesday: 9 to 9:30
Saturday: 10 to 5

NEW HAMPSHIRE

Atlantic Aqua Sports

522 Sagamore Rd.
Durham 03824
(603) 426-4443
Daily: 8 to 5, Closed Tues.

NEW JERSEY

Cedar Grove Divers Supply

492 Pompton Ave., Route 23
Cedar Grove 07009
(201) 857-1746
Tuesday-Friday: 12 to 9
Saturday: 10 to 5

Closed Sunday & Monday

Chatham Water Sports

9 North Passaic Ave.
Chatham 07928
(201) 635-5313
Monday-Friday: 12 to 9
Saturday: 10 to 5

Elite Divers

Brickchurch Plaza, Route 46
Rockaway 07866
(201) 586-2214
Monday-Friday: 11 to 9
Saturday: 10 to 5

Professional Divers, Inc.

70 Hwy. 35
Neptune City 07753
(201) 775-8292
Monday-Friday: 11 to 8
Saturday: 10 to 6

Sunday (Summer): 9 to 1

Underwater Sports Inc.

Route 17 South
Rochelle Park 07662
(201) 843-3340
Monday: 10 to 7
Tues-Fri.: 10 to 9

Sat.: 10 to 6

Whitehouse Aquatic Center

Box 97-C, Hwy. 22 West
Whitehouse Station 08889
(201) 534-4090
Monday-Saturday: 10 to 8
Sunday: 10 to 2

NEW MEXICO

New Mexico School of Diving

4010 E. Main St.
Farmington 87401
(505) 325-2728
Monday-Saturday: 10 to 6

New Mexico Scuba Center

2529 San Mateo N.E. #9
Albuquerque 87110
(505) 884-6776
Monday-Friday: 10 to 8
Saturday: 9 to 6

Sunday: 12 to 5

NEW YORK

Cougar Sports

917 Sawmill River Rd.
Ardsley 10502
(914) 893-8977
Monday-Wednesday: 10 to 8
Thursday: 10 to 7, Friday: 10 to 8

Saturday: 10 to 5

King County Divers Corp.

2417 Avenue U
Brooklyn 11229
(718) 648-4232 & 934-4153
Monday-Friday: 2 to 9
Saturday: 10 to 9

National Aquatic Service, Inc.

732 Erie Blvd. East
Syracuse 13210
(315) 479-5544
Monday-Friday: 9 to 5
Saturday: 9 to 4

Pan Aqua Diving

166 W. 75th St.
New York 10023
(212) 496-2267
Sunday-Friday: 12 to 7
Saturday: 10 to 7

Professional Scuba Center

5777 Camp Rd.
Hamburg (Buffalo) 14075
(716) 648-3483
Mon., Wed., & Sat.: 10 to 5:30
Tues., Thurs., & Fri.: 10 to 8:30

Suffolk Diving Center

58 Larkfield Rd.
E. Northport 11731
(516) 261-4388
Monday-Thursday: 10 to 6
Fri.: 10 to 8, Sat.: 10 to 6
Sunday: 10 to 3

Swim King Dive Shop

Rte. 25A
Rocky Point 11778
(516) 744-7707
Monday-Friday: 10 to 7
Saturday: 8 to 6
Sunday: 8 to 12

Underwater World, Inc.

3025 Merrick Road
Wantagh 11793
(516) 679-9709
Monday-Saturday: 1 to 8
Closed Sunday

NORTH CAROLINA

Blue Dolphin Dive Shop

1006 National Hwy.
Thomasville 27350
(919) 475-2516
Monday-Thursday: 10 to 7
Friday: 10 to 9
Saturday: 9 to 6

Olympus Dive Charters

713 Shepard St.
Morehead City 28557
(919) 726-3432
Daily: 10 to 6:30

Paradise Island Divers

2800 South Blvd.
Charlotte 28209
(704) 625-9234
Monday-Friday: 9 to 8:30
Saturday: 9 to 6

Reef & Ridge Sports

532 E. Chatham St.
Cary 27511
(919) 467-3831
Monday-Friday: 11 to 8:30
Saturday: 11 to 3

Rum Runner Dive Shop Inc.

2905 East 5th St.
Greenville 27658
(919) 758-1444
Monday-Friday: 10 to 5

Wilmington Scuba, Inc.

5028-1 Wrightsville Ave.
Wilmington 28403
(919) 759-0868
Monday-Saturday: 9 to 6
Sunday: 1 to 6

OHIO

Buckeye Diving School

48 Warrenville Center Rd.
Bedford 44146
(216) 439-3577
Mon., Wed., & Fri.: 12 to 8
Tues. & Thurs.: 11 to 6
Saturday: 10 to 5:30

C & J Scuba

5825 North Dixie Dr.
Dayton 45414
(513) 890-6900
Monday-Thursday: 10 to 7
Friday: 10 to 9
Saturday: 10 to 5

Dale's Diving Shop Inc.

302 Meigs St.
Sandusky 44870
(419) 625-4134
10:30 to 5:30
Closed Wednesday and Sunday

Dive Inc.

428 Park Ave. West
Mansfield 44906
(419) 524-2484
Monday-Friday: 12 to 7
Saturday: 10 to 5

Dive Inc. Columbus

361 E. Dublin Granville Rd.
Columbus 43229
(614) 785-0950
Tuesday-Saturday: 10 to 7
Sunday: 10 to 5
Closed Monday

Ka-Puka-Wal Dive Shop

1506 Whipple Ave. N.W.
Canton 44708
(216) 478-2511
Monday & Thursday: 11 to 9
Tues., Wed., & Fri.: 11 to 6
Saturday: 10 to 5

Ohio Dives Supply

12076 Quarry Rd.
North Baltimore 45872
(419) 257-2486
Monday-Friday: 8 to 8
Saturday & Sunday: 8 to 8

Underwater Enterprises

832 Lake Ave.
Elyria 40335
(419) 323-9542
Monday-Friday: 2 to 9
Saturday: 9 to 6
Sunday: 9 to 11

OKLAHOMA

Chalet Sports

2822 Country Club Dr. West
Oklahoma City 73116
(405) 840-1616
Monday-Saturday: 10 to 6

OREGON

Aquatic Sports & Scuba Center

10803 S.W. Barbur Blvd.
Portland 97219
(503) 245-4891
Monday-Friday: 10 to 7
Saturday: 10 to 4

Northwest Divers Supply

1911 Newmark
North Bend 97459
(503) 758-3483
Monday-Saturday: 9 to 6
Sunday: 9 to 1

Tri-West Diving Schools

13604 S.E. Powell
Portland 97226
(503) 761-5435
Monday-Friday: 10 to 8
Saturday: 10 to 5

PENNSYLVANIA

Aquatic Horizons

1501 N. George St.
York 17401
(717) 848-6908
Monday-Friday: 8 to 8
Saturday: 8 to 4

B & B Marine Specialties

Hillsville-Bessemer Rd.
Hillsville 16132
(412) 667-9448
Daily: 9 to 7

Bainbridge Dive Shop

R.D. #1, Box 23-1
Bainbridge 17502
(717) 426-2114
Daily: 9 to 7

Professional Diving Services

1135 Pittsburg
Springdale 15144
(412) 274-7719
Monday-Saturday: 9 to 9

RHODE ISLAND

Providence Aquatic Center

209 Elmwood Ave.
Providence 02907
(401) 274-4482
Monday-Friday: 10 to 8
Saturday: 9 to 6

Viking Dive Shop

124 E. Main Rd.
Middletown 02840
(401) 847-4179
Sun.-Friday: 10 to 6
Sat.: 10 to 5:30

SOUTH CAROLINA

Exotic Fish & Dive Shop

7795 East North St. Extension #12
Greenville 29615
(803) 268-0631
Monday-Thursday: 10 to 8
Friday & Saturday: 10 to 9

Neptune Dive & Ski, Inc.

133 Georgia Ave.
North Augusta 29841
(803) 270-2797
Monday-Saturday: 10:30 to 6

Waterree Dive Center, Inc.

1677 Burning Tree Rd.
Columbia 29210
(803) 731-9344
Monday-Friday: 10:30 to 6:30
Saturday: 10 to 5

TENNESSEE

Adventure Swim & Scuba

7584 Northshore Dr.
Knoxville 37919
(615) 690-3483
Monday-Saturday: 11 to 6
Closed Sunday

Choo Choo Dive Shop

5145 Hixson Pike
Chattanooga 37415
(615) 875-6263
Monday-Saturday: 10 to 6
Closed Sunday

Diving Adventures

3046 Nolensville Rd.
Nashville 37211
(615) 333-DIVE(3483)
Monday-Saturday: 9 to 6

John D. Butler Scuba Schools

5600 Brookwood Terr.
Nashville 37205
(615) 356-9340
Monday-Friday: 10 to 6

Perimeter Scuba Training Center

6215 Lee Highway
Chattanooga 37421
(615) 899-1008
Monday-Saturday: 10 to 7

TEXAS

American Diving

215 Highway 100
Arlum Professional Bldg.
Port Isabel 78597
1-800-634-5989, (512) 761-2030
Seven Days: 10 to 7

Aquaventures Dive Shop

4099 B Calder Ave.
Beaumont 77706
(409) 832-0254
Monday-Saturday: 9 to 6

Copeland's

4041 S. Padre Island Dr.
Corpus Christi 78411
(512) 854-1135
Monday-Friday: 10 to 7
Saturday: 9 to 5

Diver's Depot

720 South St.
Nacogdoches 75961
(409) 564-9622
Monday-Saturday: 10 to 6

Lone Star Scuba

2815 Alta Mere Dr.
Fort Worth 76116
(817) 377-DIVE (3483)
Monday-Saturday: 10 to 6

Pro Scuba Supply

341 St. Bonner
Tyler 75702
(214) 593-6254
Monday-Friday: 9 to 6
Saturday: 9 to 4
Closed Sunday

School of Scuba

942 Walnut
Abilene 79601
(915) 673-2349
Monday-Saturday: 10 to 6:30

Scuba Plus

1404 W. Adams
Temple 76701
(817) 773-4220
Monday-Saturday: 10 to 6

Scuba West

5500 Greenville, Suite 901
Dallas 75206
(214) 750-6900
Monday-Saturday: 10 to 6

Scuba West

9241 Skillman #104
Dallas 75243
(214) 348-8884
Monday-Saturday: 10 to 6

Scuba West

14202 Preston Rd., Suite 412
Dallas 75240
(214) 960-1300
Monday-Saturday: 10 to 6

Scuba West

2552 Joe Field Rd.
Dallas 75229
(214) 241-2500
Monday-Saturday: 10 to 6

Trawlediving Academy

5215 Sanger
Vaco 76710
(817) 772-6674
Monday-Saturday: 10 to 6
Summer: 7 days

Trident Diving Equipment

2110 West Ave.
San Antonio 78201
(512) 734-7442
Monday-Saturday: 10 to 7

Tropical Divers

2250 Thousand Oaks #212
San Antonio 78232
(512) 490-DIVE (3483)
Monday-Friday: 10 to 7
Saturday: 9 to 5
Sunday: 11 to 3

UTAH

Dive Utah
4678 South 2225 East
Holladay 84124
(801) 277-DIVE
Monday-Friday: 10 to 6
Saturday: 10 to 4

Scuba Utah

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always assuming the fish are there no matter how many times they aren't. You must learn to ease gently along the bottom, sneaking around rocks and reefs, quietly slipping through kelp, and you must always be ready to shoot.

For these reasons, many experienced spearfishermen eschew tanks. They know the continuous noise of breathing and exhaust bubbles spook fish. Free divers willingly give up the ability to stay underwater for extended periods of time to gain the freedom and quiet of diving without scuba. Free diving increases the challenge of spearfishing.

The first commandment of spearfishing is: Thou Shalt Not Splash. Watch your kick when on the surface. Fins are designed for underwater use. Many new divers seem to enjoy slapping their way across the surface, kicking up a wake like a ski boat with a bent prop. If you can hear your kick, or even see your own wake, you won't see large fish.

The second commandment is: Never Chase Fish. If you can't sneak up on them, let them come to you. Chasing

on not being taken by surprise, but two floundering terrestrial bipeds in the aquatic environment make stealth almost impossible. You should definitely have a dive buddy or have filed a dive plan with someone, but try using the "same ocean" buddy system. That is where you and your buddy are in the same area but not a body-length apart. If you are free diving, visual contact will be frequently made on the surface. When using scuba, swim patterns which periodically intersect. In either case, have a plan if contact is not made at predetermined intervals.

If you are hunting on scuba, moving quietly is difficult. You should practice breathing slowly and easily. Move as efficiently as you can with long sweeping kicks and gentle body movements. When you see a good fish, rather than swimming directly at it, circle around and try to ambush it. If the fish is swimming in a specific direction, sometimes you can swim parallel to it's direction of travel and gradually close the gap. Line the gun up slowly and shoot across your body without ever turning direct-

Outsmarting a fish might not be much of a demonstration of the intelligence of the hunter but, when every instinct of the hunted has evolved to insure its survival, and when the hunter is completely out of his element, the challenge becomes apparent. In spearfishing, the obvious advantages of the prey demand

THE SPEARFISHERMAN,

the hunter to utilize every trick at his disposal.

Stealth is the key to successful spearfishing. Every bit of cover must be used to mask your approach, and no noise can be made that will not blend in with natural sounds. The hunter must be constantly aware that fish can feel movement in the water around them. Any sudden move sends out pressure waves most fish can feel at surprising distances.

In many cases the diver will be stalking fish that can't be seen. He must anticipate their presence and hunt

them won't work because you can't outswim them. Some fish like black sea bass or grouper are territorial and curious. While you still can't outswim them, they may allow you to approach close enough for a shot, or they may approach you if you are in their territory. Most fish recognize bad intentions faster than a Missouri Baptist, and chasing them, or even swimming directly at them only confirms your evil intent.

The next suggestion is considered heresy in most diving circles, so I will qualify it with a few provisos. Once you have the experience to be comfortable with the idea and are confident you can do so safely—dive alone. It's hard enough for one clumsy human to sneak up on a creature whose existence hinges

ly toward the fish.

Most fish have a *flight* distance. That is a sphere around them which they will not allow anything perceived as dangerous to penetrate. Enter that sphere and you can wave good-bye to dinner. The size of the sphere seems to be directly proportional to the size of the fish; the larger the fish the greater the flight distance. Your mission is to penetrate the flight distance of your quarry to within the range of your gun.

Much has been written about selecting a speargun. The choice usually is between pole spears, pneumatic, and band-powered guns. Pole spears are effective for filling the pan but, are too limited in application. Evaluate the type of fish you will be hunting, the water

Bob Marx is a diving instructor and avid spearfisherman. This series is his first contribution to Diving & Snorkeling.

you will hunt, and your own skill and capabilities before choosing a speargun.

Having a gun that will shoot 20 feet is not only unnecessary, it can be dangerous in water with only 10 feet of visibility. On the other hand, to have a gun with a range of only five feet while hunting yellowtail in clear water will be at best frustrating.

Most hunters should forget extremes in spearguns. The small pistol-type pneumatics and 20-inch band guns have such limited range and killing power that they are useful only for incidental hunting. Divers shooting catfish in inland lakes or divers shooting lingcod in caves may find them useful but, most hunters will find they seldom get close enough to shootable fish to use short-range guns. The same is true of the novice diver/spearfisherman using a six-foot gun to shoot 10-inch fish from five feet away. Your first gun should be in the midsize category with a shaft between two and four feet long.

Pneumatic guns will have a greater range for their size than standard band guns of comparable size, and I believe

Photo by Timothy O'Keefe



Part II



BY BOB MARX

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they are a better choice for the novice because they are simpler to use.

For hunting large, open-water fish, you will need one of the larger band guns. The physical limits of the shaft for even the largest pneumatics prevent them from maintaining sufficient energy to penetrate large, tough fish at long range.

As your skills increase, you will want to own other guns for various shooting situations. More on guns, how to rig them, and tips on using them will be included in the final installment of this series in the next issue.

To prepare for actual hunting, weight yourself for neutral buoyancy at your planned hunting depth. Most divers are so overweighted they swim through the water at a 45-degree angle with their shoulders lifted by their BCs while their weight belts drag the rest of them toward the bottom. As they change depth, the radical BC volume changes make it impossible to maintain neutral buoyancy. Without good buoyancy control, stealth will be impossible.

Small, sharp knives are much more useful to a spearfisherman than large Rambo intimidators. You will want to carry the knife where it can be reached with either hand. A good location is on the shoulder. The waist will work equally well. Reaching down to your ankle can be difficult in some situations. If you wear a knife on the outside of your thigh, it will tangle in everything.

Eliminate shiny chrome buckles (unless you are hunting barracuda). The sunlight flashing off them as you swim will tip off fish to your presence.

Dark-colored wetsuits seem to blend into the marine environment better than some of the new bright colors. There are some new camouflage patterns available in neoprene that show a lot of promise. Anything to break up your outline underwater is going to make you less conspicuous and improve the chance of getting within range of a good-size fish.

Many pelagic fish can be lured within range with little tricks. I've known free divers who tied feather jigs to the muzzles of their guns. They would use these lures to entice curious fish within range. Another trick is to wear goggles with white or yellow palms and wiggle your fingers to imitate the dull flashing of baitfish in the distance.

It often seems the disturbance of repeated surface dives will cause predatory fish to investigate the commotion. I have often found that the only way to bring extremely spooky pelagics into range is to turn and swim directly away from them. Sometimes they will pass me to see what I am chasing. When executing this maneuver I carry my gun parallel to my body with my trigger hand at my belt buckle and

the muzzle just in front of my nose. This position allows me to extend the gun and shoot in one fluid motion without having to swing the gun against the resistance of the water.

Another common situation is to have a fish, such as bass, turn and face you as you ease around some obstruction. This Mexican standoff usually results in the hunter waiting for the fish to turn broadside presenting the perfect shot. When the fish finally turns, it does so at about Mach II, exiting stage left. The next time this happens to you, aim right between the fish's eyes and shoot. Invariably you will find the tip penetrates just behind the gill making a perfect broadside hit. When you shoot, the fish sees or feels the shaft coming but, can't back up. Coming forward only exacerbates the problem, so it turns to flee. When fish turn they don't turn away from their center line like a car. As they swing their heads to the right their tails come around to the left. To execute a stationary turn they present themselves broadside for an instant. So take that head on shot.

It is legal to bait fish into shooting range? Is it ethical? Many beginning spearfishermen learn the trick of crushing sea urchins or tumbling rocks around to chum up the waters and bring bottom dwelling fish into range. Check local fish and game regulations to deter-

mine what is legal in your state. One side of the argument is that anything that works only increases the diver's edge a little and is no worse than a top-side angler chumming fish to the rod. Ethically, the challenge is to take the fish in a fair chase. Either way, spearfishing is so inefficient, it will never constitute a threat to any species of fish.

Concentrated fishing of local reef fish can decimate or eliminate certain territorial fish from high pressure areas. Each spearfisherman owes it to himself and his sport to behave as a sportsman; to kill quickly and cleanly; to utilize his catch completely; and to obey the law and his conscience.

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The falls at Balaine

ST. VINCENT

(Continued from page 41)

situated on a 636-foot promontory overlooking the city. According to local legend, it was the only fort in the Caribbean to have its guns pointed inland rather than seaward, because of the danger of attacks from the fierce Arawaks. A good tale, but since the fort was completed as late as 1806, the story may be somewhat exaggerated. However, the guns definitely do point inland.

The day before, I'd seen the outline of a sunken ship from the walls of Fort Charlotte. I was disappointed to learn it was nothing very ancient, only the remains of a Swedish tugboat that had caught fire. Dive St. Vincent reported the wreck could be dived, but was not too exciting for anyone who's seen a lot of shipwrecks. There are better, less visible wrecks also within sight of the fort.

Beyond Fort Charlotte is the fishing and whaling village of Barrouaille. Many of the houses, like those in Kingstown, are painted soothing pastel shades, but clouds muted their lively colors while I was there. A whaling boat, basically nothing more than an unusually long motorized canoe, was just coming in, empty. Whaling has a long tradition here, and in truth the

TRAVEL TIPS

Getting There

The extra effort it takes to travel to St. Vincent and the Grenadines is what's kept them from developing too fast, but the journey is actually no more difficult than going to Bonaire via Curacao, though the flight is certainly longer. BWIA, the major Caribbean-based airline, has developed an extensive route system within the last few years.

Barbados is the closest island with connections to St. Vincent. BWIA offers regular service from New York and Miami to Barbados. The more I fly BWIA, the more I am impressed by their efficiency, promptness, and courteous personnel.

From Barbados, you transfer to LIAT, which at the moment supplies the only service to St. Vincent. St. Vincent is only 100 miles from Barbados so the hop is a short one. Be careful of any ticket changes made with LIAT; make changes only in person, not by phone, or you may find yourself missing from the passenger list, as I did. Fortunately, there was room on the plane, so I didn't miss my connection back to Barbados, but I could have. For both BWIA and LIAT, check in well ahead of time and don't forget to reconfirm your reservation at least 72 hours before departure.

Where To Stay

St. Vincent's premier hotel is on Young Island, a private resort island which provides frequent, free ferry service to the mainland. The cottages basically are one large bedroom (king-sized beds) with ceiling fan and a private, outdoor shower. This can be an extremely romantic setting, depending on which cottage you're assigned. Some cottages are remote and well hidden from public view, while others are right on the beach. Scattered about the island, there are significant differences in the amount of ocean breeze the cottages receive. It's best to be very specific in what you want when you make reservations. Snorkeling is available behind Young Island, which has a complete watersports facility. Daily rates for two people including breakfast and

dinner varies from \$210 to \$355 per day depending on the time of year. The cheapest period is from mid-April to mid-December. For reservations, write Ralph Locke Island, P.O. Box 800, Waccabuc, NY 10597. Phone: (800) 223-1108 or (914) 763-5526.

A budget vacation is available at The Umbrella Beach Hotel, a 10-room European-style hotel located between Dive St. Vincent and Mariner's Yacht and Scuba Center. A single room is \$28 a day, a double \$38, and triple \$48. Each room has its own refrigerator and stove so you can cook your own meals. Write: The Umbrella Beach Hotel, Villa, St. Vincent, WI. Phone: 84411; FAX: 74800.

In Bequia, rates for the Friendship Bay Resort Hotel, which has its own dive operation, are from \$125-\$225 per day for two people with breakfast and dinner included, depending on the time of year. Write: P.O. Box 9 Bequia, St. Vincent, WI; or phone: (800) 223-6764 for reservations. To call the hotel directly, Phone: 83222.

Dive Operations

Dives cost approximately \$40 each or a two-tank trip for \$65.

A day trip to the Falls of Balaine with one tank is \$70 per person and includes a picnic lunch. For complete information, write Dive St. Vincent, Box 864, St. Vincent, WI; Phone: 74714. Also the Mariner's Watersports & Scuba Center, P.O. Box 639, St. Vincent, WI; Phone: 84228. For Bequia, write the Friendship Bay Hotel (see above).

When To Go

The rainy season is May to December, and the runoff then can sometimes affect visibility at St. Vincent. It's not as much of a problem at Bequia.

Electricity

European style, 220-240 volts, 50 cycles A.C., which requires a transformer to charge flash equipment and dive lights.

Currency

The Eastern Caribbean dollar (EC\$) is the standard. Most places (except hotels) quote prices in EC\$, not U.S. dollars.

For More Information

Write the Dept. of Tourism, St. Vincent & the Grenadines, 801 Second Ave., New York, NY 10017. Phone: (212) 687-4981.

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Vincentians do the whale population little damage because of the method in which it is done. The harpoon is thrown by hand, which almost requires the harpoonist to stand over a whale and drive the point in with the force of his own weight. I was told it had been at least three years since a whale had been taken, so the industry is hardly thriving.

St. Vincent has about 50 different dive sites on its 18-mile long lee side. We anchored over one well past Barrouallie. I soon discovered that each dive site is noted for one thing in particular—any two are seldom alike. This first spot had huge basket sponges on a relatively shallow reef. Big barrel sponges are also found at Chateaubelair, while the Coral Castle has magnificent stands of unusually tall pillar coral.

In fact, St. Vincent seems to have something for almost everyone. Besides good reef formations, old bottles can regularly be found at Bottle Reef below Fort Charlotte. This coral garden received its name from the old rum and gin bottles tossed down as litter, but which are now highly prized. Wreck enthusiasts have two frequently dived sites in Kingstown Harbor, the 120-foot ferry, the *Seamstrand*, and the smaller *Nomad*. Almost all dive sites can be reached within a half hour, so our day-long boat trip to the falls was an unusually lengthy one.

Unfortunately, I wasn't seeing underwater St. Vincent at its best. Runoff from recent heavy rains had reduced visibility to only about 40 feet, and all the crud floating in the water made photography difficult. This is not an uncommon situation around islands whose land is as lush as St. Vincent's. This was during the rainy season, which runs from May to December. Because of its comparatively massive size, St. Vincent receives more rain than most of the other Grenadines with the exception of Grenada, which is even larger. Runoff can also be a problem in Grenada.

It was edging toward 1 p.m. when our boat anchored off the beach near the Falls of Balaine. This beach, like the others, was black sand, a testimony to St. Vincent's volcanic origin. Volcanic activity is not part of the island's distant past. La Soufriere volcano last erupted in 1979 (on Friday the 13th, naturally). The volcano, normally shrouded in clouds, is at the island's northern end, quite close to the falls. It's action, however, has little effect on the major population centers well to the south.

The walk to the falls was a short one. We were the only boat here, so we had the falls and its deep pool (an ideal swimming hole) to ourselves. The rock walls surrounding the cascading water were luxuriant with ferns and other plants, giving the spot an almost-

primeval atmosphere. Knowing there was an active volcano on the other side of the rock shelf added to the slightly eerie feeling.

We didn't picnic here but instead returned to the boat after about an hour and started retracing our route. We finally stopped for lunch at a spot known as Sand Dollar Beach because of the many sand dollars in the shallows. A path of palm fronds leads across the black sand beach, a much-needed walkway since the dark sand retains heat and makes walking across it very uncomfortable.

After lunch, instead of returning to Young Island, I had our dive boat drop me off in Kingstown so I could catch the

late afternoon ferry to Bequia, closest of the Grenadines. Bequia (pronounced Beck-way) is only nine miles and a \$5, one-hour ferry ride from St. Vincent. It has several dive operations which take divers to the waters off its seven-square-mile land mass. Although the day had been mostly overcast on St. Vincent, the sun was bright and shining at Bequia, and the water clearer.

I took a taxi-truck (a small flatbed outfitted with benches) to the Friendship Bay Hotel overlooking beautiful Friendship Bay, just a short distance from the harbor town of Port Elizabeth. Compared to St. Vincent (which enjoys a very slow pace), life on Bequia seemed

(Please turn to page 78)

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TRAVEL TIPS

About the Country

Approximately one third the size of the state of California, 152 miles wide by 256 miles long, the Central American country of Costa Rica holds a vast amount of natural beauty and resources in the forms of first-class sportfishing (on both the Caribbean and Pacific coasts), rich farmlands, and some of the most spectacular tropical rain forests in the world.

But unlike its next-door neighbors, Nicaragua (to the North) and Panama (to the South), Costa Rica is governed by a democratic system that has maintained it as a peaceful country, free of political and regional unrest. Due to its neutral position, Costa Rica has not involved itself in any global conflicts since World War II, earning it the title "the Switzerland of Central America."

Dive Operations

There are currently two competent operations for handling divers: El Ocotol (the best equipped, land-based resort for routine ventures to the Bat and Catalina islands) near Playa del Coco on the Gulf of Papagayo. Far from the beaten path, this resort offers spacious accommodations, tennis courts, and a swimming pool. Prices for a typical diver package for 7 days, 6 nights at El Ocotol start at \$695 per person, including 2 boat dives a day (tax and airfare not included).

Making routine trips to Cocos Island for 11 days at a time, the Okeanos Aggressor is a 120-foot vessel fully outfitted for 18 passengers. A trip on the Okeanos is \$1,695 (not including airfare).

Immigration Requirements

A valid passport is required to enter Costa Rica.

Language

Spanish is the official language and is spoken throughout the country. English is the second language but is not commonly used.

When To Go and What To Bring

Being close to the equator, the climate is both hot and humid with some cool breezes at night. Average daily temperatures are normally in

the mid- to upper-80s by day and the low-80s at night. Attire is casual with summer clothes suitable throughout the year. The best time to go is during the raining season (June to September) when the seas are at their calmest and the underwater visibility is at its best (50 to 60 feet, often reaching 70 to 90 feet). During summertime full wet suits may not be necessary; water temperatures vary from 69 to 80 degrees due to the upwelling of deep water currents. A partial wet suit and/or wet skin of some type is strongly recommended because of thick growths of barnacles and stinging hydroids that cover the rocks. A full wet suit is recommended during the windy season, November through April, when water temperatures are colder (65 to 75 degrees) due to a more constant upwelling generated by high winds.

Getting There

Laca Airlines has direct, non-stop flights from Miami, Houston, and New Orleans to San Jose, Costa Rica. When planning your trip, it is a good idea to be at the ticket counter two hours before departure or you run the risk of being bumped off your flight, regardless of confirmed reservations. A roundtrip coach fare to Costa Rica from Miami costs \$302. There is no entry fee but there is a \$5 per person departure tax collected at the airport. Once in San Jose, ground transportation is provided by the resort.

Further Information:

Go Diving

7630 W. 78 Street
Minneapolis, MN 55435
(800) 328-5285 or (612) 942-9687

Hialeah Travel

P.O. Box 2866
Hialeah, FL 33012
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See & Sea Travel Service, Inc.

50 Francisco St. Suite 205
San Francisco, CA 94133
(415) 771-0077

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170 Denny Way
Seattle, WA 98109
(800) 247-3483 or (206) 441-3483

COSTA RICA

(Continued from page 59)

dition to the smaller fish inhabiting the rocky crevices, there is also a wide assortment of invertebrates including colorful nudibranchs, flatworms, shrimps, crabs, and sea stars awaiting discovery.

Although not as exciting as the Bat Islands or the Catalinas, Viradote Rock, an inshore group of pinnacles inside the Gulf of Papagayo that rises up from a depth of only 60 feet, is still fertile, with enough marine life to intrigue even the most seasoned diver. During one dive I came across an 80- to 90-pound grouper that graciously provided me only a brief moment to snap his picture. Congregated for reasons still unknown to me, was a massive school of grunts. So massive was this school, they virtually blocked out the light from the surface as they passed over me. Who would think that something as mundane as a simple grunt could provide such a thrilling spectacle!

Besides the considerable numbers of reef predators and various species of pelagics, the coastline pinnacles are also home to a robust populace of colorful reef fish such as varieties of angelfish, butterfly fish, and damselfish. What makes this even more extraordinary is that some fish species characteristically found in the Caribbean are also found here. During my stay, I observed several species of tropical reef fish I had thought were indigenous only to the Caribbean: porkfish, soapfish, creole fish, coco damselfish, barred cardinal fish, and flame fish, to name just a few.

The diversity and quantity of marine life here are by no means accidental. From deep below, nutrient-rich cold water currents periodically rise up along the coastline providing, in combination with the photosynthesis of the sun, the necessary food for the surface column's large community of plankton. The combination is necessary for the thick planktonic blooms that supply essential food resources for supporting this quantity of marine life. Smaller animals like sardines and other small fish fry, feed upon the plankton and in turn become food for the larger predators.

The very same currents that transport these nutrient-laden cold waters are also the predominant cause for the slight-to-almost-nonexistent growth of the harder stony corals. Adorned with an array of benthic communities such as clusters of encrusted sponges and barnacles, red and pink gorgonians, colonial anemones, and small trees of white hydroids, the rock formations are anything but barren.

On a slightly darker note, the sparkling clear visibility normally en-

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countered in the Caribbean is not commonly seen here, even on the best days. The underwater visibility, on the average, ranges from 40 to 50 feet during the winter months (December to March), sometimes reaching up to 80 to 90 feet during the prime season (June to September). Occasionally, with no warning at all, visibility can drop to as low as 20 to 30 feet for brief periods, changing rapidly within minutes or days.

During these periods of low visibility the largest numbers of marine life gather. This is due to the higher concen-

trations of plankton. For an underwater photographer, however, it seems a kind of royal injustice when the clarity drops to completely frustrating levels. To be frank, I feel if there could be both heaven and hell rolled up into one for an underwater photographer, this most surely would be it. The challenge makes capturing those exceptional shots all the more rewarding.

Although there are dozens of dive sites to visit around the Bat Islands, with many more in need of discovery, the coastal waters of the Gulf of Papagayo are largely unexplored. Most of the dives are conducted in depths ranging from 40 to 120 feet along the steep slopes and vertical walls of both the Bat and Catalina Islands. It is important to note, most of the islands and rock pinnacles rise up from depths of 250 feet, making it easier to accidentally stray to deeper depths. Undoubtedly this is not a place for the beginner.

Diving or even fishing are not the only things to do in Costa Rica. Scattered throughout the country's interior one can explore magnificent rain forests that have been designated National Parks but the country's own National Park Program. Visits to these locations can be arranged through most travel agencies as well as dive operations.

ST. VINCENT

(Continued from page 75)

even more relaxed and laid back. There is little entertainment outside the hotels or the water, so you'd definitely better like the person you're traveling with.

Bequia's diving revealed miles of good healthy reef and loads of fish. There are even a couple of walls for those who like dramatic plunges into the deep. The walls typically are covered with big deepwater gorgonians. Rays, big morays, and sharks are commonly seen at several sites thanks to the deep channel between St. Vincent and Bequia.

The biggest thrill is during the winter months, when sperm and humpback whales frequent the area. The Whaleboner Restaurant in Bequia's Port Elizabeth provides slightly overwhelming testimony to the whales' presence: the entrance arch is formed of two whale ribs. The waterfront path to the restaurant was temporarily blocked by a small group that gathered to watch a large green marine iguana sunning itself in the middle of the path.

Active volcanoes, whale rib arches, big green iguanas...where else are you likely to find such things?

\$

Trivia Quiz ANSWERS

1. Parasitism, mutualism, and commensalism.
2. Commensalism.
3. a. and d. only.
4. Pacific. Pacific. Pacific.
5. a. = 3. b. = 4. c. = 1 and d. = 2.
6. Sea Net Manufacturing Company.
7. a. Spearfishing in Mexico.
b. Mexican swimmer Apolonio Castillo.
8. Diver/Photographer Zale Perry Neuman and Diver/Educator Al Tillman.
9. Catadromous.
10. Antioxidants.
11. Saturation diving.
12. True.
13. a. = 3. b. = 1. c. = 4 and d. = 2.
14. False. Use the rate of ascent prescribed by the table in use. Some are different.
15. True.
16. a., b., and d. NEVER OIL DIVING EQUIPMENT: Sand and dirt stick to oily parts.
17. Teddy Tucker.
18. d. Emeralds.
19. Hudson's Bay.
20. North America.

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for your lure during retrieve — a component of sensitivity often overlooked by makers of lesser reels.

Stainless steel ball bearings for smoothness. Most of the competition have just one ball bearing (if any). Browning 800 SuperLights have two. One at the rotating head, and one on the cranking handle shaft.

Dual Coil bail system for dependability. Sooner or later the torsion springs in conventional reels end up breaking. Coil springs, like those found in the Browning Dual Coil bail system, will probably never break.



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